



ATKINS

Rainbow Municipal Water District

# 2015 Urban Water Management Plan

June 2016



# Rainbow Municipal Water District Urban Water Management Plan 2015 Update

June 2016

Prepared for:  
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# 1.0 Introduction

## 1.1 Overview

This 2015 Urban Water Management Plan (Plan, UWMP) has been prepared by the Rainbow Municipal Water District (District, or RMWD) in accordance with the requirements of California's Urban Water Management Planning Act (Act) and related provisions of the California Water Code, as included in **Appendix A**. The Act establishes as State policy that, "the management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources." To advance that goal, the Act requires that urban water suppliers develop UWMPs to assesses current demands and supplies over a 20-year planning horizon, and addresses methods to ensure reliable and adequate water service to meet the needs of the various categories of customers during normal, dry, and multiple dry years. The plan documents that the water supplies available to RMWD customers are adequate to meet demands over the required 20 year planning period.

The mission of RMWD is to provide its customers reliable, high quality water and water reclamation services in a fiscally sustainable manner. Together with the San Diego County Water Authority (Water Authority, or SDCWA) and Metropolitan Water District (MWD), RMWD works to provide a reliable supply to its customers through water management, conservation and careful planning.

## 1.2 Urban Water Management Planning and the California Water Code

The Urban Water Management Planning Act (UWMP Act) became part of the California Water Code in 1984 with the passage of Assembly Bill 797. The original legislation has subsequently been modified several times, most notably in 2009 by the provisions of SBX7-7, the "20 percent by 2020" legislation. The Act requires urban water suppliers to prepare and submit to the California Department of Water Resources (DWR) a UWMP every five years, in years ending in 0 and 5. For the 2015 plans, the legislature extended the deadline to allow agencies to report on their compliance with certain 2015 target conservation goals, and the current plans are due to be filed with DWR by July 1, 2016.

UWMPs are to include the following:

- Assessment of current and projected water supplies
- Evaluation of demand and customer types
- Evaluation of the reliability of water supplies
- Description of conservation measures implemented by the urban water supplier
- Response plan, in the event of a water shortage
- Comparison of demand and supply projections

With the passage of SBX7-7 in November 2009 as part of the Water Conservation Act of 2009, retail urban water providers are now required to comply with the conservation requirements of SBX7-7 in order to be eligible for State water grants or loans. The additional UWMP information required by SBX7-7 includes:

- Baseline per capita water use data

- 
- Per capita water use targets
- Interim per capita water use targets

## 1.3 Changes to the Act

Major amendments made to the Act subsequent to preparation of the District's 2010 UWMP Plan include the following:

- **Water Code Section 10631 (f) (1) and (2), Assembly Bill 2067 (2014)** - Requires water suppliers to provide narratives describing their water demand management measures, as provided. Retail water suppliers are required to address the nature and extent of each water demand management measure implemented over the past 5 years and describe the water demand management measures that the supplier plans to implement to achieve its water use targets.
- **Water Code Section 10621 (d), Assembly Bill 2067 (2014)** – Extended the submittal deadline and requires each urban water supplier to submit its 2015 UWMP to DWR by July 1, 2016.
- **Water Code Section 10644 (a) (2), Senate Bill 1420 (2014)** - Requires the plan, or amendments to the plan, to be submitted electronically to DWR.
- **Water Code Section 10644 (a) (2), Senate Bill 1420 (2014)** - Requires the plan, or amendments to the plan, to include any standardized forms, tables, or displays specified by DWR.
- **Water Code Section 10631 (e) (1) (J) and (e) (3) (A) and (B), Senate Bill 1420 (2014)** - Requires the UWMP to quantify and report on distribution system water loss.
- **Water Code Section 10631 (e) (4), Senate Bill 1420 (2014)** - Provides for water use projections to display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans, when that information is available and applicable to an urban water supplier.
- **Water Code Section 10631.2 (a) and (b), Senate Bill 1036 (2014)** - Provides for an urban water supplier to include certain energy-related information, including, but not limited to, an estimate of the amount of energy used to extract or divert water supplies.
- **Water Code Section 10632 (b), Assembly Bill 2409 (2010)** - Requires urban water suppliers to analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.

## 1.4 UWMPs in Relation to Other Planning Efforts

The District's 2015 UWMP integrates with other District planning efforts and with related planning efforts of SDCWA, the County of San Diego, and others. Key related planning efforts are listed below:

- **RMWD Water and Wastewater Master Plan Update:** The UWMP's projections of future demands and local supplies are derived from and are consistent with those described in the District's 2015 Water and Wastewater Master Plan Update (Atkins, 2016).
- **San Diego County Water Authority Regional UWMP:** Information on demands and planned local supplies from RMWD's UWMP has been coordinated with SDCWA for presentation in its 2015 Regional UWMP.

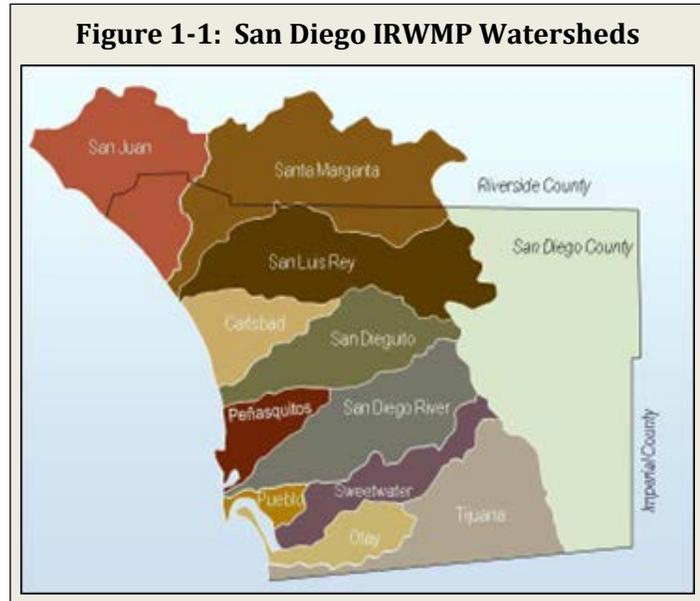
- **San Diego Regional Agricultural Water Management Plan:** The San Diego Regional Agricultural Water Management Plan (RAWMP) is a cooperative effort of the San Diego County Farm Bureau (SDCFB) and fourteen retail water agencies, including the District, that serve agricultural customers in the northern half of San Diego County. The RAWMP documents the efficient water management practices of these agricultural water customers and these agencies as a whole.
- **San Diego Association of Governments Regional Plan:** The District's projections of future water demands are based on demographic projections made by SANDAG as part of its 2015 Regional Plan. The SANDAG projects are fully consistent with the adopted land use plans of the County of San Diego and each of the various municipalities within San Diego county.
- **San Diego County General Plan:** As noted in the SANDAG Regional Plan description above, the District's water demand projections are consistent with the adopted General Plan land uses of the County of San Diego. The County will review the District's UWMP and use the document as needed to provide documentation of available water supplies relative to any land use decisions that come before the County during the five-year life of the current UWMP.
- **San Diego Integrated Regional Water Management Plan:** See description below.

#### 1.4.1 Integrated Regional Water Management Plans

California legislation passed in 2000 promotes the development of Integrated Regional Water Management Plans (IRWMPs). The process involves an integrated approach to water management planning by providing the framework for local agencies to cooperatively manage local and imported water supplies and improve water supply quality, quantity, and reliability. Many of the IRWMP elements are also part of an UWMP and can be addressed cooperatively during the UWMP process.

The San Diego IRWMP supports RMWD's and SDCWA's UWMPs by promoting regional planning and supporting projects that aim to increase water supply reliability and improve surface water and groundwater quality. IRWM planning and funding will help to make possible water supply projects in the areas of seawater desalination, recycled water, local surface water, and groundwater, which are part of the region's projected mix of water resources. The IRWM program also supports water conservation, another key element of RMWD's and SDCWA's UWMPs.

The District participated in the development of the San Diego IRWMP, a copy of which can be found at <http://www.sdirwmp.org/>. The watershed boundaries of the San Diego IRWMP planning region are shown in **Figure 1-1**.



## 1.5 UWMP Organization

This UWMP is organized consistently with DWR's 2015 Urban Water Management Plans Guidebook, and contains the following chapters:

**Chapter 1 – Introduction and Overview**

**Chapter 2 – Plan Preparation**

**Chapter 3 – System Description**

**Chapter 4 – System Water Use**

**Chapter 5 – Baselines and Targets**

**Chapter 6 – System Supplies**

**Chapter 7 – Water Supply Reliability**

**Chapter 8 – Water Shortage Contingency Planning**

**Chapter 9 – Demand Management Measures**

**Chapter 10 – Plan Adoption, Submittal, and Implementation**

## 2.0 Plan Preparation

### 2.1 Application of UWMP Act to RMWD

The District has prepared this UWMP in accordance with the Urban Water Management Planning Act and the California Water Code. The District is subject to the Act because it satisfies the definition of an “Urban Water Supplier” operating a “Public Water System.”

District identification information required for the plan is summarized in **Table 2-1**.

**Table 2-1: Public Water System Identification**

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	2015 Volume of Water Supplied (AF)
3710016	Rainbow MWD	7,838	20,062
<b>TOTAL</b>		<b>7,838</b>	<b>20,062</b>

### 2.2 Regional Planning and Compliance

The Act allows groups of water agencies to form Regional Alliances for reporting on per capita water use targets. The District is not part of a regional alliance. Required plan identification information is presented in **Table 2-2**.

**Table 2-2: Plan Identification**

Select	Type of Plan		Name of RUWMP or Regional Alliance
X	<b>Individual UWMP</b>		
	No	Water Supplier is also a member of a RUWMP	
	No	Water Supplier is also a member of a Regional Alliance	
No	<b>Regional UWMP</b>		

## 2.3 Units of Measure

The District reports its data on a fiscal year basis. Water supplies and demands are reported on an acre-foot (AF) volume basis and may sometimes be referred to in acre-feet per year (AF/yr) to represent the total volume of water referenced for a full fiscal year. Both of these units are maintained consistently throughout the plan. Required plan information is summarized in **Table 2-3**.

**Table 2-3: Units of Measure**

Type of Agency	
X	Agency is a retailer
Fiscal or Calendar Year	
X	UWMP Tables Are in Fiscal Years
Units of Measure Used in UWMP	
X	Acre-Feet (AF) (1 AF = 325,851 gallons)

## 2.4 Coordination and Public Outreach

### 2.4.1 Wholesale and Retail Coordination

The District currently relies upon SDCWA for 100 percent of its water supply. The District has coordinated the preparation of its UWMP with SDCWA, and has provided SDCWA with projected water demands and local supplies in five-year increments through 2040. SDCWA has used the information provided by the District in preparing its 2015 Regional UWMP.

Required plan information is summarized in **Table 2-4**.

**Table 2-4: Water Supplier Information Exchange**

Wholesale Water Supplier Name
<b>Potable Water:</b> San Diego County Water Authority

### 2.4.2 Coordination with Other Agencies and the Community

The District coordinated the preparation of its UWMP with appropriate local agencies, including other water suppliers that share a common source, water management agencies and relevant public agencies, to the extent practical. Notification of the update of the 2015 UWMP was sent out more than 60 days prior to the public hearing to all water management agencies, wastewater agencies, cities in and adjacent to the District's service area, and the County of San Diego. Coordination efforts are summarized in **Table 2-A**.

The draft UWMP was made available on the District's website, and in hardcopy form beginning on May 10, 2016. Within 30 days of the adoption, copies of the final UWMP, including information on water service reliability, will be sent to DWR, the California State Library, and the County of San Diego, and will be posted on the District's website and made available for review in hardcopy form at the District's offices during normal working hours.

**Table 2-A: Coordination with Stakeholder Agencies**

Coordinating Agencies	Participated in Plan Development	Commented on Draft	Attended Public Meetings	RMWD Contacted For Assistance	Was Offered Draft Plan	Was sent Notice of Intention to Adopt
<b>Relevant public agencies</b>						
• County of San Diego					X	X
• City of Oceanside					X	X
• City of Vista					X	X
<b>General public</b>						
• General Public			X		X	X
<b>Wastewater agencies</b>						
• City of Oceanside					X	X
<b>Water management agencies</b>						
• San Diego County Water Authority	X			X	X	X
<b>Other water suppliers</b>						
• Fallbrook Public Utilities District					X	X

### 2.4.3 Notice to Cities and Counties

The District notified the County of San Diego, the City of Oceanside, and the City of Vista at the start of the UWMP process, well in advance of the required 60 days prior to the UWMP public hearing.

## 3.0 Rainbow Service Area

### 3.1 Service Area Boundaries

RMWD serves the San Diego County unincorporated communities of Rainbow and Bonsall, a portion of the unincorporated community of Fallbrook, and small portions of the cities of Vista and Oceanside. The District's boundaries cover approximately 78 square miles. The northern part of the District is located north of the San Luis Rey River and straddles Interstate 15 (I-15) while the southern part of the District is located west of I-15 and straddles the San Luis Rey River. The District's service area boundaries are shown in **Figure 3-1** on the next page.

The District provides water service to all of the area within its boundaries, and sewer service to a smaller area within the San Luis Rey river valley. The District currently owns, through contract, capacity to treat 1.5 million gallons of sewage per day at the San Luis Ray Wastewater Treatment Plant in Oceanside. The District's sewer service area includes over 2,150 connections mainly along the State Route 76 (SR-76) corridor.

The service area of RMWD is heavily agricultural, and water for agriculture accounts for approximately three-quarters of District water sales. Agricultural crops include avocados, citrus, commercial nurseries, strawberries, tomatoes, corn and livestock.

### 3.2 Governance

RMWD was formed in 1953 under the Municipal Water District Act of 1911 (Section 7100 et. seq. of the CWC). RMWD joined the Water Authority and MWD the same year, acquiring the right to purchase and distribute imported water throughout its service area.

The District is governed by a five member elected Board of Directors which sets ordinances, policies, taxes, and rates for providing sewer and potable water services within the District service area. The District is revenue neutral: each end user pays their fair share of the District's costs of capital improvements, water acquisition, and the operation and maintenance of its facilities.

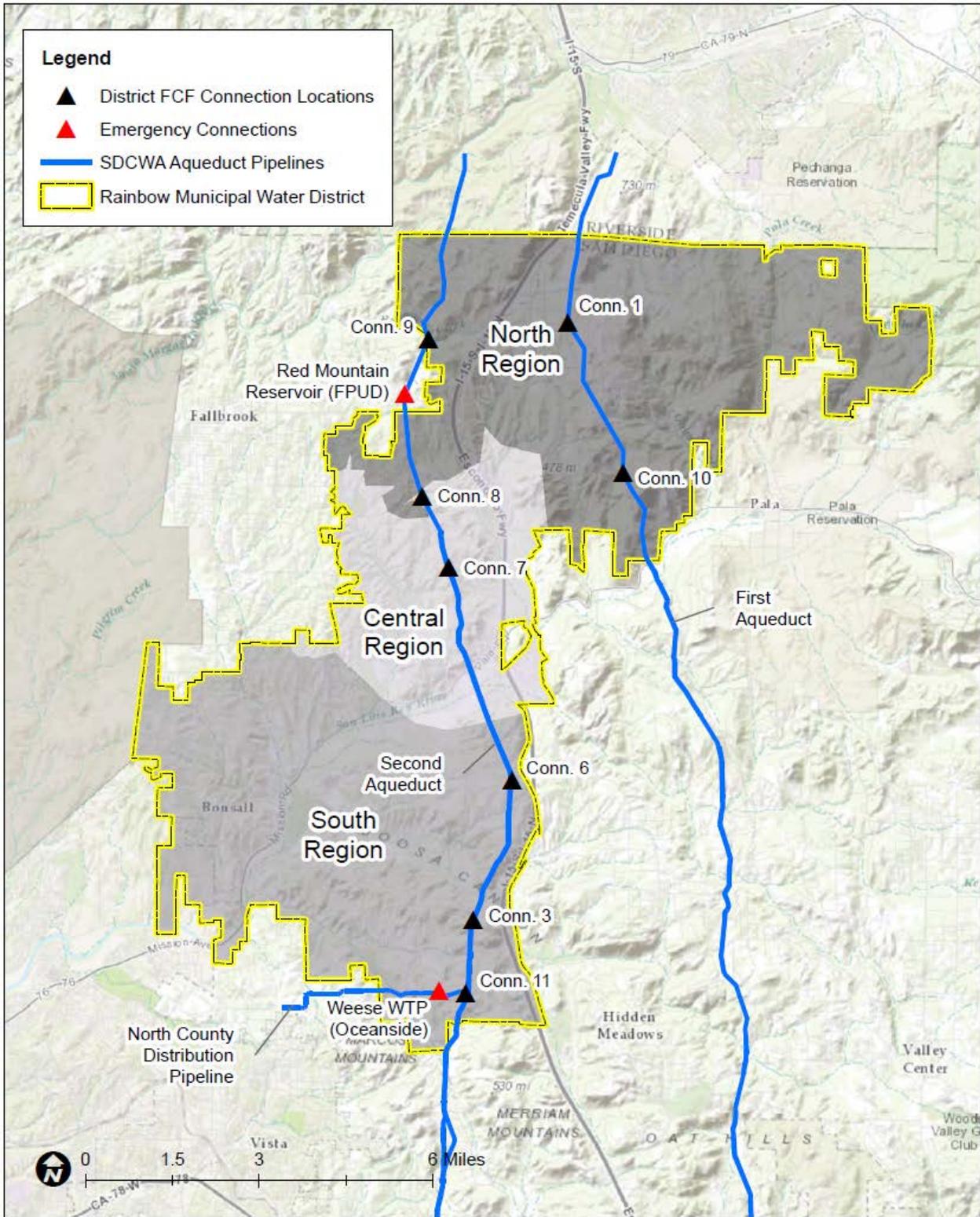
### 3.3 Climate and Terrain

The District's climate is mild, varying from a low mean daytime temperature of 69 degrees in the winter to a high mean daytime temperature of 86 degrees in the summer. The average annual rainfall of approximately 16 inches occurs primarily from December through March.

Most of the District is mountainous and consists of hills and valleys with a mix of primarily intermittent streams and some perennial streams and rivers. The topography ranges from 150 to 2,200 feet mean sea level. The San Luis Rey River crosses diagonally through the District from the northeast to the southwest, and several smaller creeks divide the area, including Gopher Canyon, Moosa Canyon, and Tamarack Creeks. Much of the area still remains in its natural state of chaparral, oak, and coastal sage vegetation.

Per SDCWA's most recent climate change analysis, the median predicted climate change will increase average ETo in the District service area by 1.8% by 2035. The District projects that other factors being equal, the increase in ETo will result in a like increase in irrigation unit demand factors.

Figure 3-1: Rainbow Service Area



## 3.4 Population

To facilitate the projection of the District’s future water demands, it is important to have well supported estimates of future population totals. The District consulted with the San Diego Association of Governments (SANDAG), which collects and analyzes land use, population and economic information within the County of San Diego in order to develop a number of useful projections, among them population. DWR has consulted with SANDAG regarding their population projection methods and has approved SANDAG projections for use in the UWMP process for its member agencies. Upon receiving confirmation of DWR approval of the SANDAG methodology, the District has proceeded with the use of SANDAG population projections as the basis for this UWMP.

The District has grown very little subsequent to its previous UWMP of 2010, but now anticipates increasing levels of development over the current UWMP planning horizon. The projected increase in population reflects planned residential development approved in the last update to the San Diego County General Plan. Current and projected future District population counts are summarized in **Table 3-1**.

**Table 3-1: Current and Projected Service Area Population**

Population Served	2015	2020	2025	2030	2035	2040
	20,279	23,789	24,967	26,145	28,219	28,336

Source: SANDAG Series 13, custom data sort to District service area boundary

## 4.0 Water Use

### 4.1 Existing Use by Customer Class

Total water use in the District during FY 2015 is summarized in **Table 4-1**.

**Table 4-1: Demands for Potable and Raw Water - Actual FY 2015**

Use Type	FY 2015 Actual		
Use Category	Additional Description	Level of Treatment When Delivered	Volume (AF)
Single Family		Drinking Water	4,236
Multi-Family		Drinking Water	332
Commercial		Drinking Water	2,068
Agricultural		Drinking Water	12,312
Losses	Non-Revenue Water, including apparent and real losses	Drinking Water	1,114
<b>TOTAL</b>			<b>20,062</b>

Notes: Volumes reported for individual customer classes are metered sales, exclusive of non-revenue water (real and apparent losses). Non-Revenue water calculated as difference of SDCWA FY 2015 deliveries and District FY 2015 sales, exclusive of minor change in storage and minor effect of billing period time lag.

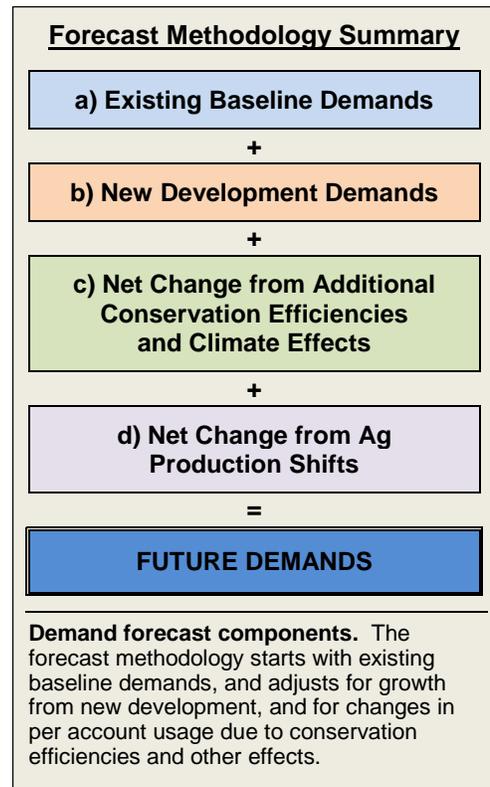
Water demands in the District service area have declined significantly in recent years, down from down from a peak of 33,940 AF in FY 1981, and 33,300 AF as recently as FY 2004. This drop in demands has occurred in response to increasing water prices, periods of drought-induced water use restrictions, agricultural market conditions, increased customer adoption of a conservation ethic, and other factors. Agricultural demands in particular have been steadily declining through the years as a response to increasing water costs which make it more difficult to profitably run agricultural businesses, and increasing property values which make selling the underlying land more attractive. Some agricultural sectors, such as nurseries, have seen growth in business and increases in water demands, but the overall trend for agricultural water use has been a decline.

## 4.2 Projected Future Water Use

### 4.2.1 Approach / Methodology

The Master Plan forecasts future water demands using existing unit demands as a baseline, and scales these based on the net effects of growth, conservation, agricultural outlook, and other factors. The forecast methodology is outlined below.

- a) **Existing baseline unit demands.** The Master Plan uses actual unit use factors for calendar year 2013 as the baseline normal condition demands for the forecast period. 2013 demands are sufficiently distant from the water use restrictions in effect during 2009-10. 2013 was moderately dryer than normal, which would tend to increase use, but this increase is offset by below-normal economic activity as the economy continued to recover.
- b) **New development.** New residential development demands are generated using the baseline unit use factors, and the SANDAG Draft Series 13 projections for the District at the pressure zone level of spatial resolution.
- c) **Reduced demands due to additional conservation efficiencies and other factors.** The Master Plan projects unit use rates will continue to decline over time in response to increased water rates, conservation education, and shifting landscape preferences. These factors are summarized in **Table 4-A**.



- d) **Change in Agricultural demands.** Agricultural demands are forecast based on District estimates, and on price-elasticity of demand response to projected increased water prices.

**Table 4-A: Summary of Unit Use Adjustment Factors**

<b>FACTORS DRIVING UNIT USE REDUCTIONS</b>	
<b>Landscape Ordinances</b>	As required by State law from 2010 and as amended by the State Water Resources Control Board in 2015, all land use jurisdictions have adopted landscape ordinances limiting new landscape construction water use to 55% ET for residential construction, and 45% for non-residential construction. The state requirements also limit turf utilization in all types of construction and in and streetscape uses. As a result, new construction in the District will feature less grass, and be lower water using in comparison to pre-2010 construction.
<b>Weather-Based Irrigation Controllers</b>	Newer landscape irrigation controllers can automatically adjust irrigation schedules consistent with actual climate conditions and plant water needs, reducing unnecessary use due to over-irrigation. The use of these controllers will become increasingly common during the planning horizon.
<b>Turf Retirement</b>	Up until late-2015 MWD and SDCWA were providing financial incentives to customers who replaced grass with low water use landscapes, helping drive a transition of customer landscape preferences away from turf. In the District service area, this transition will likely continue gradually over the course of the planning horizon.
<b>High-efficiency clothes washers</b>	Newer clothes washing machines, in particular front-loading versions, are more water efficient than older traditional-style washers.
<b>High-efficiency toilets</b>	California regulations enacted in 2011 require new toilets to operate with a maximum of 1.28 gallons per flush, compared to 1.6 gpf per the previous 1992 requirements. This will reduce water use at new SFR and MFR construction. Rebate programs funded by MWD and others will support a gradual transition to the newer toilets.
<b>MFR Submetering</b>	Future MFR construction will be subject to requirements that individual units be submetered and billed by usage. The direct price signal to the consumer results in reduced water use.
<b>Increasing Real Prices / Behavioral Changes</b>	Retail water rates may continue to increase at a rate faster than inflation, driven by increases in wholesale rates. Customers respond by reducing use.
<b>FACTORS DRIVING UNIT USE INCREASES</b>	
<b>Climate Change</b>	Per SDCWA's most recent climate change analysis (2013 Water Facilities Master Plan, Appendix E), the median predicted climate change will increase average ETo in the District service area 1.9% by 2035, and approximately 3% by 2050.
<b>OTHER FACTORS</b>	
<b>Agricultural Practice</b>	With agriculture representing approximately three-quarters of total District demands, the District demand forecast is sensitive to changes in agricultural practices and changes in agricultural customer's response to water price increases. The District's median forecast assumes that overall agricultural water usage will remain flat at approximately current levels over the UWMP planning horizon.

#### 4.2.2 Projected Potable Water Demands

The Master Plan projects that future demands will remain approximately at current demand levels, despite underlying growth in population, housing, and employment. Water use per account and per capita will continue to decline in response to the conservation and other factors outlined above.

The District's projected potable water use is summarized in **Table 4-2**.

**Table 4-2: Projected Water Demands**

Use Type	Additional Description (as needed)	Projected Water Use				
		2020	2025	2030	2035	2040
Residential		3,990	4,150	4,200	4,470	4,450
Commercial		580	580	580	580	580
Agricultural		14,370	14,220	14,180	13,930	13,780
Other	Temporary Construction Meters	60	60	60	60	60
Losses	Non-Revenue Water, including real losses	1,810	1,810	1,810	1,810	1,790
<b>TOTAL (rounded)</b>		<b>20,400</b>	<b>20,800</b>	<b>20,800</b>	<b>20,900</b>	<b>20,700</b>

Notes: Volumes reported for individual customer classes are metered sales, exclusive of non-revenue water and losses. Non-Revenue water estimates as difference of total system deliveries and metered sales.

#### 4.2.3 Projected Recycled Water Demands

The District is studying a possible Water Reclamation Facility to develop a supply of recycled water for use within the District service area. The project remains at the "Planned" level and the District does not yet classify potential yield of the project as a "Verifiable" supply for purposes of water supply documentation in this UWMP. Additional discussion on the District's local supply development plans, inclusive of recycled water, is presented in **Section 6**.

#### 4.2.4 Projected Near-Term Annexation Demands

The District anticipates that additional lands will annex to its service area during the planning horizon for this UWMP. These Near-Term Annexations may include those developments listed below:

- Warner Ranch: The owners of this 210 acre property located north of Pala have proposed construction of up to 780 residential units, which inclusive of parks, slope landscaping, and other development components could generate water demands on the District of approximately 519 AF/yr. The property has on-site wells which could be used to serve non-potable irrigation demands.

Because this Near-Term Annexation project is not currently within the District service area, the District's Master Plan and this UWMP do not include the prospective project demands in the District totals. However, the potential demands of this and other Near-Term Annexations throughout San Diego county are accounted for in SDCWA's Regional UWMP, which documents the availability of supplies as needed to serve these demands subject to approval of their annexations by the retail water district, SDCWA, MWD, and the San Diego Local Area Formation Commission.

## 4.2.5 Projected Total Water Demands

The District's total projected demands are summarized in **Table 4-3**.

**Table 4-3: Total Water Demands**

	2015	2020	2025	2030	2035	2040
<b>Potable and Raw Water</b> <i>from Tables 4-1 and 4-2</i>	20,062	20,810	20,820	20,830	20,850	20,660
<b>Recycled Water Demand</b> <i>from Table 6-4</i>	0	0	0	0	0	0
<b>TOTAL WATER DEMAND</b>	<b>20,062</b>	<b>20,810</b>	<b>20,820</b>	<b>20,830</b>	<b>20,850</b>	<b>20,660</b>

Notes:

Volumes reported for individual customer classes are metered sales, exclusive of non-revenue water and actual losses. Non-Revenue water estimates as difference of total system deliveries and metered sales.

Demands associated with possible Near-Term Annexation projects are not included, but are addressed in SDCWA's Regional UWMP.

## 4.3 Distribution System Water Loss

Distribution system water losses result from leaks from pipelines and storage facilities. The District has calculated losses using the American Water Works Association Manual M36, *Water Audits and Loss Control Programs*, and the corresponding AWWA calculation worksheet documented in Appendix L of DWR's 2015 UWMP Guidebook. The analysis distinguishes between Real Losses, which are actual losses due to leaks from pipelines, storage reservoirs, and service connections; and Apparent Losses, which consist of water that is put to beneficial use but which is not recorded as metered water sales due primarily to under-registering customer meters. The worksheet is provided as **Appendix D** and will be submitted electronically to DWR.

The audit results are summarized in **Table 4-4**.

**Table 4-4: Water Loss Audit Reporting for CY 2015**

	Water Losses		
	Real <sup>(1)</sup>	Apparent <sup>(2)</sup>	Total
<b>Volume (AF)</b>	204 AF	949 AF	1,153 AF
<b>% of Total Deliveries</b>	1.0%	4.7%	5.7%

(1) Real losses are actual losses due to leaks.

(2) Apparent losses consist of water that is beneficially used but not recorded as metered sales.

## 4.4 Estimating Future Water Savings

The District's water demand forecasting methodology, as summarized in Section 4.2.1, specifically accounts for future water savings resulting from conservation and other factors. Related information required for the UWMP is summarized in **Table 4-5**.

**Table 4-5: Inclusion in Water Use Projections**

Are Future Water Savings Included in Projections?	Yes
Page Numbers Where Described	12, 13
Are Lower Income Residential Demands Included In Projections?	Yes

## 4.5 Water Use for Lower Income Households

The District's water demand forecasting methodology, as summarized in Section 4.2.1, incorporates all of the existing and planned housing of the County of San Diego, the only land use jurisdictions within the District service area. These housing elements, inclusive of low-income housing, are included in the demographic summaries and forecasts of SANDAG on which the District water demand forecasts are based. The District water demand forecast therefore incorporates all of the existing and planned low-income housing of each of its land use jurisdictions. Related information required for the UWMP is summarized in **Table 4-5** above.

## 4.6 Climate Change – Influence on Water Demands

The District's water demand forecast incorporates predicted effects of climate change on irrigation demands. Using data assembled by the Water Authority in its 2013 Water Facilities Master Plan<sup>1</sup>, the District has adjusted irrigation unit use factors to account for a 1.9 percent increase in reference evapotranspiration by 2035, and a 3.0 percent increase by 2050. Additional details on the District's water demand forecast are included in Section 4.2. Additional review of climate change issues for the San Diego country area are presented in the Water Authority's 2015 Regional UWMP.

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<sup>1</sup> SDCWA 2013 Water Facilities Master Plan, Appendix E: "Analysis of Potential Climate Effects on Water Authority Demands." The ETo percentage increase for 2050 is derived from Table 2, which shows a 1.8% increase for the District service area by 2035.

## 5.0 Baselines and Targets

### 5.1 Water Conservation Act of 2009 (SB X7-7)

In 2009 the legislature approved and the Governor signed Senate Bill X7-7, the Water Conservation Act of 2009 . The Act required urban water agencies achieve a reduction in per capita water use of 20 percent by 2020, relative to certain specified baseline conditions.

As a part of BS X7-7, urban water suppliers are required to develop a 2020 urban water use target, and also a 2015 interim target, that meets the plan’s water conservation intent. In 2010, DWR released a manual titled Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use, which provided retail water agencies with specific requirements and methodologies for setting water use efficiency goal and compliance standards for 2020. The manual provided four alternative methods for calculating targets. The District selected Method 1 for use in its 2010 UWMP, and identified a baseline period of 1999 through 2008.

### 5.2 Updating Calculations from 2010 UWMP

For the 2015 UWMP, the District has updated the calculations presented in the 2010 UWMP to utilize refined annual population estimates developed by SANDAG and referenced to 2000 and 2010 census data at the census block level. These revised population counts result in minor changes to the District’s 2015 and 2020 per capita use targets, reducing the target values by approximately four percent in comparison to the target values reported in the District’s 2010 UWMP. The complete set of SB X7-7 calculation tables are included in **Appendix E**.

### 5.3 Baseline Periods and Targets

SB X7-7 requires agencies to develop baseline per capita water use and to develop reduced per capita consumption targets in order to comply with the conservation goals of the 20 x 2020 plan. The baseline periods can be 10- or 15-years and must end between December 31, 2004 and December 31, 2010. In its 2010 UWMP, the District used a 10-year baseline spanning the years 1999 and 2008. Water suppliers must also calculate a 5-year baseline to confirm that the selected 2020 target meets the minimum water use reduction requirements and is a continuous 5-year period that ends no earlier than December 31, 2007 and no later than December 31, 2010. The District selected a baseline between 2003 and 2007. These same baselines are used for the 2015 UWMP.

In 2010 the District used Method 1 to calculate its 2020 target. Method 1 is also used for the 2015 UWMP. Method 1 is summarized below:

**Method 1 – 80 Percent of Baseline Water Use**

This method sets a target at 80 percent of the 10-year baseline. This value must be less than 95 percent of the 5-year baseline.

The resulting per capita use target levels of 2015 and 2020 are summarized in **Table 5-1**. The complete set of SB X7-7 calculation tables are included in **Appendix E**.

**Table 5-1: Per Capita Use Baselines and Targets Summary**

Baseline Period	Start Year	End Year	Average Baseline GPCD	2015 Interim Target	Confirmed 2020 Target
10 year	1999	2008	1503	1,352	1,202
5 Year	2003	2007	1515		

Notes: All values are in Gallons per Capita per Day (GPCD). Target GPCDs from SBx7-7 Table 8.

## 5.4 2015 Compliance Daily per Capita Water Use

Actual per capita water use in the District for FY 2015 was 246 GPCD, less than the SB 7X-7 2015 target level of 316 GPCD. This indicates the District is in compliance with the SB 7X-7 2015 interim target. SB X7-7 2015 compliance information is summarized in **Table 5-2**.

**Table 5-2: Per Capita Use 2015 Compliance**

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments		2015 GPCD* (Adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015?
		Total Adjustments	Adjusted 2015 GPCD		
883	1352	0	883	883	Yes

Notes: All values are in Gallons per Capita per Day (GPCD)

## 5.5 2015 Residential Daily per Capita Water Use

The per capita use information contained in Tables 5-1 and 5-2 is based on total District water use, of which a large majority is for agricultural uses. When considering Residential per capita use, exclusive of agriculture, the average usage is considerably lower than for total District use. The data in **Table 5-A** summarizes residential per capita use, and provides a more level comparison of urban water use in the District to that of other urban water retailers. The usage rate is calculated following reporting methodology adopted by the State Water Resources Control Board as part of the 2015 emergency conservation actions.

**Table 5-A: Residential GPCD**

Reporting Period	Residential GPCD
FY 2015	285

Notes: Gallons per Capita per Day (GPCD)

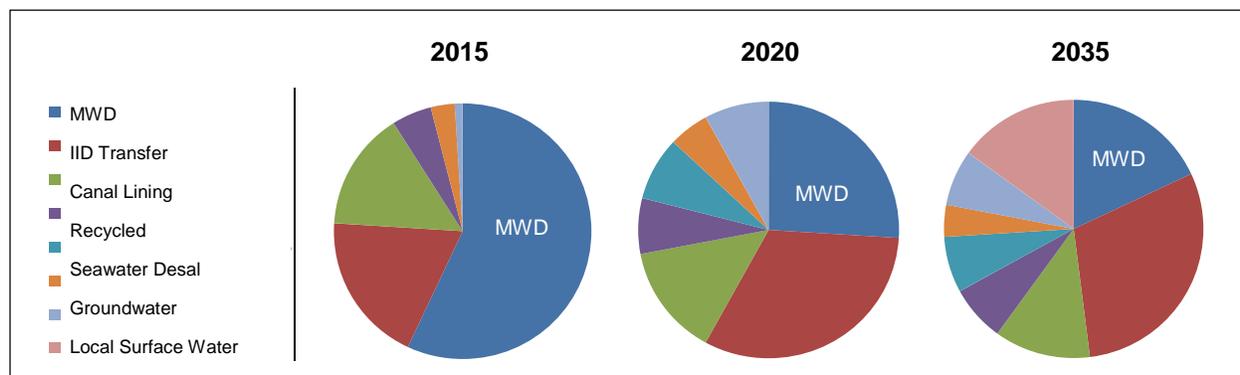
## 6.0 System Supplies

This chapter describes the existing and planned supplies of water available to the District, including the District's current supply of water purchased from the Water Authority, as well as the District's plans for the development of local recycled water and groundwater supply projects. Supply reliability relative to projected demands is discussed in Chapter 7.

### 6.1 Purchased or Imported Water

The District currently relies on the Water Authority for 100 percent of its supply. A complete description of the Water Authority and its supplies can be found in its 2015 Regional UWMP ([www.sdcwa.org/uwmp](http://www.sdcwa.org/uwmp)). The Water Authority has greatly diversified its supply from 1990, when in average years approximately 85 to 90 percent of San Diego County's water supply was provided by MWD. In comparison, in 2015 the portion of the Water Authority's supply obtained from MWD was approximately 57 percent, with the reduced reliance a result of Water Authority projects like the Imperial Irrigation District Transfer, conserved water from the All American and Coachella Canal lining projects, and seawater desalination. The Carlsbad Seawater Desalination project started production in December 2015 and is expected to provide approximately 8 percent of the County's supply. By 2035, the Water Authority projects that only 18 percent of the County's supply will come from MWD. The changing composition of the Water Authority's supplies over time is shown below in **Figure 6-1**.

**Figure 6-1: SDCWA Supply Portfolio Current and Projected**



MWD has two main sources of supply, the California State Water Project and the Colorado River. A complete description of all of MWD and its supplies can be found in MWD's Regional UWMP (available on MWD's website at [www.mwdh2o.com](http://www.mwdh2o.com)). RMWD has relied upon the water supply information provided by the Water Authority and MWD in preparing the RMWD 2015 UWMP and for purposes of fulfilling the informational requirements of the Act.

### 6.2 Existing and Verifiable Local Supplies

The District does not currently obtain any of its supply from local sources. The District is studying opportunities to develop new local recycled water and groundwater supplies, but these projects are in evaluation and have not yet advanced to a level of certainty sufficient to include as verifiable components of the District's future supply portfolio.

The remainder of this section includes information required for the UWMP. Future local supply opportunities are addressed in **Section 6.3**.

### 6.2.1 Groundwater

The District does not currently utilize groundwater as an existing source of supply. The District is continuing to evaluate opportunities for development of groundwater supplies from the Bonsall Basin, as further described in Section 6.3.

Required information for the UWMP is summarized in **Table 6-1**.

**Table 6-1: Groundwater Volume Pumped**

<input checked="" type="checkbox"/> Supplier does not pump groundwater.						
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
	None	--	--	--	--	--
TOTAL		0	0	0	0	0

### 6.2.2 Surface Water

The District does not currently utilize surface water as an existing source of supply. Several small surface water bodies, most notably the San Luis Rey River, run through the District. However, river flows are insufficient for diversion for consideration of use as a water supply. The District has no plans to develop surface water within its service area as a water supply.

### 6.2.3 Stormwater

The District does not currently utilize stormwater as an existing source of supply. The district is rural and is largely undeveloped and in an undisturbed state, and its terrain is dominated by mountains and valleys. The District has no plans to develop stormwater within its service area as a water supply.

### 6.2.4 Recycled Water

The District does not currently utilize recycled as an existing source of supply. The District is continuing to evaluate opportunities for development of its own recycled water project, as further described in Section 6.3. Additional information required for the UWMP on wastewater generation and treatment, agency coordination, and RMWD actions to encourage the use of recycled water, is addressed below.

#### Wastewater Collection, Treatment and Disposal

The District operated a sewer collection system within the San Luis Rey River corridor portion of its overall service area. The remainder of the service area is more rural in character and is unsewered.

The District conveys all of the wastewater collected by its sewer system to the City of Oceanside, via an outfall sewer line located in the San Luis Rey river valley. The District has a contract in place with the City of Oceanside which allows the District to convey and have treated up to 1.5 MGD of sewage at the City of Oceanside's San Luis Rey Water Reclamation Plant (SLRWRP). Although that capacity is available, the District does not currently produce that volume of wastewater, and in 2015 conveyed an average of only 0.54 mgd (606 AF for the year) of wastewater to the Oceanside plant.

In addition to its main sewer collection system, the District is the co-permittee for the small Oak Crest WWTP. Wastewater collection estimates are shown in **Table 6-2**.

**Table 6-2: Wastewater Collection Within RMWD Service Area**

Wastewater Collection			Recipient of Collected Wastewater			
Wastewater Collection Agency	Volume Metered or Estimated?	Volume (AF) from Service Area 2015	Receiving Entity	Treatment Plant Name	WWTP Located in RMWD?	Operation Contracted to Third Party?
RMWD	Metered	606	City of Oceanside	San Luis Rey WWTP	No	No
RMWD / Oak Crest Estates	Metered	13	Spray Field	Oak Crest Estates WWTP	Yes	Yes
<b>TOTAL</b>		<b>619</b>				

The only wastewater treatment or discharge within the District service area is the small Oak Crest Estates WWTP operation. Required plan information presented in **Table 6-3**.

**Table 6-3: Wastewater Treatment and Discharge Within RMWD Service Area**

Wastewater Treatment Plant Name	Discharge Location	Disposal Method	Treats Flows From Outside Service Area?	Treatment Level	2015 Volumes (AF)		
					Volume Treated	Recycled Within Service Area	Recycled Outside of Service Area
Oak Crest Estates	4747 Oakcrest Road, Fallbrook	Spray irrigation	No	Secondary	13	0	0
<b>TOTAL</b>					<b>13</b>	<b>0</b>	<b>0</b>

#### Recycled Water Coordination

As part of its Water Master Plan Update completed in 2016, the District completed a concept study which detailed how a wastewater treatment plant could be constructed within the District, the potential benefits of such a system, the potential recycled water demand available and the system that would be needed to serve recycled water to that demand. This potential project is further described in Section 6.3. As part of the concept study, the District coordinated with the City of Oceanside to explore wastewater treatment and recycled water opportunities.

#### Recycled Water System

Currently the District does not own or operate any recycled water distribution facilities.

#### Recycled Water Beneficial Uses

Recycled water has a host of potential uses, primarily exterior uses such as agricultural or landscape irrigation, wildlife habitat enhancement, wetlands maintenance, industrial reuse, groundwater recharge, indirect potable reuse and others. As mentioned previously, the District has an abundance of agriculture within its service area which would be the primary beneficiary of recycled water. Additionally, the District could potentially serve some landscape irrigation and wildlife habitat demands, but the majority of customers would likely be agricultural. In order to serve those users the District needs a supply of recycled water and needs a distribution system. The feasibility of those items is currently being investigated by the District, as further reviewed in Section 6.3.

### Projected Verifiable Recycled Water Use

As of this writing the District does not have any plans for the development of recycled water which would qualify under the UWMP process as verifiable. Therefore, in the official UWMP tables reported with this document the District will show no projected recycled water beneficial uses.

Required plan information pertaining to recycled water use is presented below in **Tables 6-4 and 6-5**.

**Table 6-4: Current and Projected Recycled Water Uses Within Service Area**

Beneficial Use Type	General Description	Level of Treatment	2015	2020	2025	2030	2035	2040
Agricultural irrigation			--	--	--	--	--	--
Landscape irrigation			--	--	--	--	--	--
Golf course irrigation			--	--	--	--	--	--
Commercial use			--	--	--	--	--	--
Industrial use			--	--	--	--	--	--
Geothermal /other energy			--	--	--	--	--	--
Recreational impoundment			--	--	--	--	--	--
Wetlands or wildlife habitat			--	--	--	--	--	--
Groundwater recharge (IPR)*			--	--	--	--	--	--
Indirect Potable Reuse			--	--	--	--	--	--
Direct potable reuse			--	--	--	--	--	--
<b>TOTAL:</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**NOTES:** The District is studying a possible Water Reclamation Facility to develop a supply of recycled water for use within the District service area. The project remains at the "Planned" level and the District does not yet classify potential yield of the project as a "Verifiable" supply.

**Table 6-5: Projected vs. Actual 2015 Recycled Water Use (AF/yr)**

Use Type	2015 Projection from 2010 UWMP	Actual 2015 Use
Agricultural irrigation	--	--
Landscape irrigation (excludes golf courses)	--	--
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	--	--
<b>TOTAL</b>	<b>0</b>	<b>0</b>

### Actions to Encourage and Optimize Future Recycled Water Use

California's Recycling Law (CWC § 13500, et seq.) establishes a policy to encourage the use of recycled water and provides that the use of potable domestic water for the irrigation of green belt areas, cemeteries, golf courses, parks, and highway landscaped areas constitutes an unreasonable use of water where recycled water is available for such uses, as further set forth by statute. Among other provisions, CWC §§ 71610 and 71611 authorize RMWD to provide and sell recycled and non-potable water within the District's service area.

District actions to encourage and optimize the future use of recycled water within the District service area are summarized in **Table 6-6**.

**Table 6-6: Projects to Expand Future Recycled Water Use**

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Use (AF/YR)
WRF Feasibility Study	The District is studying a possible Water Reclamation Facility to develop a supply of recycled water for use within the District service area. The project remains at the "Planned" level and the District does not yet classify potential yield of the project as a "Verifiable" supply.	TBD	TBD
<b>TOTAL</b>			<b>TBD</b>

### 6.2.5 Desalinated Water Opportunities

The District does not currently use any desalinated water supply sources. Within San Diego County, desalination has recently become a significant source of supply with the completion and operation of the Poseidon Carlsbad Desalination Project in Carlsbad, which adds 50 MGD of desalinated water to the SDCWA supply portfolio.

The District's plans for possible development of a brackish groundwater desalting project are described in Section 6.3.

### 6.2.6 Exchanges or Transfers

The District relies entirely upon water purchased from the Water Authority, but does participate in emergency transfers with neighboring agencies in order to improve reliability. The District has interconnections with the City of Oceanside at the City's Weese Water Treatment Plant and with the Fallbrook Public Utility District (FPUD). The UWMP Act encourages transfers and exchanges of water between agencies in order to improve the reliability and quality of agency water supplies. In addition to the existing interconnections, RMWD has in its CIP from its most recent Water Master Plan Update to add additional interconnections to the FPUD system. The proposed new interconnections will provide additional reliability to some of the District's water pressure zones which need additional fire flow capacity or supply redundancy.

Regional exchanges and transfers being pursued by the MWD and SDCWA are documented in those agencies Regional UWMPs.

## 6.3 Possible Future Local Supplies

The District is currently conducting and reviewing studies of two possible local supply projects, as described below.

### 6.3.1 Recycled Water Project

In September 2015 the District completed a preliminary study (Atkins, 2015) examining the feasibility of constructing a District-owned wastewater reclamation facility and recycled water distribution system. These facilities would be capable of delivering up to approximately 1,500 AF/YR of recycled water to District customers, reducing potable water demands by a like amount. The District is currently embarked on more detailed preliminary design studies to confirm the feasibility of the project.

At present, the District conveys the entirety of the wastewater collected within its sewer service area to the City of Oceanside for treatment and disposal. In light of recent and ongoing drought conditions within southern California, the District has contemplated whether construction of its own water recycling project would be more cost effective and resource-efficient than continued conveyance of wastewater flows to the City. The 2015 preliminary study considered several options of plant siting, sizing, and other factors, and compared the overall costs and benefits of these to the No Project alternative of continued wastewater conveyance to Oceanside.

### 6.3.2 Groundwater Desalter

In January 2016 the District completed a preliminary study (West Yost Associates, 2016) examining the feasibility of developing local San Luis Rey River basin groundwater resources<sup>2</sup> for District use. The project would include a well field, and either the construction of a Rainbow groundwater desalting plant, or the conveyance to an expansion of the City of Oceanside's existing groundwater desalting plant for treatment and exchange of supply back to the District. The preliminary study examines a project developing up to 4,000 AF/YR of new treated supply. The groundwater to be developed originates as District-supplied imported water to the basin, and percolates to the groundwater as a result of agricultural irrigation and soil salinity management practices. As such, the District classifies the project as an Imported Water Return Flow Reclamation project.

The District is evaluating the findings of the preliminary study prior to committing to further action on the project. Although the preliminary results of the study appear promising, the District recognizes that additional engineering and environmental evaluations will be necessary to confirm project feasibility and sizing. For purposes of this UWMP, the District anticipates that a Phase I groundwater project would be sized for production of approximately 2,000 AF/yr, and that future expansions to higher capacities may be possible but are subject to various planning uncertainties.

### 6.3.3 Summary of Possible Local Supply Volumes

For purposes of supply planning, the Water Authority in its Regional UWMP distinguishes between local supply projects that are Verifiable, Planned, or Conceptual. Verifiable projects are those projects that have a high level of certainty of being completed, such that they can be relied on as an assured component

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<sup>2</sup> Groundwater in the Bonsall basin is classified by the State Water Resources Control Board as an underground stream, and as such is governed by surface water right doctrines.

of the region's future supply portfolio. Planned projects are those that have been subject to affirmative feasibility investigations, but which have additional permitting, environmental, and/or financial approval hurdles remaining before they are implemented. Conceptual projects are, as the name implies, project concepts that have not been subject to formal study or that have significant uncertainties or obstacles to implementation.

For formal UWMP reporting, the District has included only verifiable projects in its official projections of future supply availability, as summarized in **Table 6-7** below. The table reflects that the District does not have any future local supplies that have yet advanced to the level of Verifiable.

**Table 6-7: Verifiable Future Water Supply Projects**

Name of Future Projects or Programs	Joint Project with other agencies?	Description	Planned Implementation Year	Planned for Use in Year Type	Expected Supply (AF/yr)
None					0

**NOTES:** Only "Verifiable" projects are included. Verifiable = CEQA satisfied, permits in hand, or contracts have been executed. The District is studying possible Water Recycling and Groundwater projects, but these remain at the "Planned" and "Conceptual" levels of development and the District does not yet classify potential yields of these projects as "Verifiable" supplies.

The District's projections of Planned and Conceptual future local supplies are summarized in **Tables 6-7P and 6-7C** below. These tables are not part of the official UWMP table set and are provided for supplemental information only.

**Table 6-7P: Additional Planned Future Water Supply Projects**

Name of Future Projects or Programs	Joint Project w/ other agencies?	Description	Possible Implementation Year	Planned for Use in Year Type	Possible Supply (AF/yr)
<b>Rainbow Recycled Water Project – Initial Phase</b>	No	The project would produce recycled water for irrigation uses within the District service area.	2020 to 2025	All (baseline supply)	1,000
<b>Bonsall Groundwater Desalter – Initial Phase</b>	No	The project would treat brackish groundwater for potable use within the District service area	2020 to 2025	All (baseline supply)	2,000
<b>TOTAL:</b>					<b>3,000</b>

**NOTES:** Only "Planned" projects are included. Planned projects are those that have been subject to affirmative feasibility investigations, but which have additional permitting, environmental, and/or financial approval hurdles remaining before they are implemented. This table is not part of the official DWR UWMP table set and is presented as supplemental information only.

**Table 6-7C: Additional Conceptual Future Water Supply Projects**

Name of Future Projects or Programs	Joint Project with other agencies?	Description	Conceptual Implementation Year	Planned for Use in Year Type	Conceptual Supply (AF/yr)
<b>Rainbow Recycled Water Project Expansion</b>	No	Possible expansion of Planned project	2025 to 2030	All (baseline supply)	500
<b>Bonsall Groundwater Desalter Expansion</b>	No	Possible expansion of Planned project	2025 to 2035	All (baseline supply)	2,000
<b>TOTAL:</b>					<b>2,500</b>

NOTES: Only "Conceptual" projects are included. Conceptual projects are those project concepts that have not been subject to formal study or that have significant uncertainties or obstacles to implementation. This table is not part of the official DWR UWMP table set and is presented as supplemental information only.

## 6.4 Summary of Existing and Planned Sources of Water

Chapter 6 has served to identify all of the District's existing, planned and potential water supply sources available to meet the District's anticipated demands. As discussed, the District is studying possible future local supply projects, but these have not yet advanced to the level of Verifiable and are therefore not available to include as assured components of the District's future supply portfolio.

Required plan information is summarized below. Table 6-8 lists the District's sources of supply for fiscal year 2015, and **Table 6-9** lists the District's projected source and volume of verifiable supply for the UWMP's planning horizon.

**Table 6-8: FY 2015 Water Supplies - Actual**

Water Supply	Additional Detail on Water Supply	FY 2015	
		Volume (AF)	Water Quality
Purchased or Imported Water	San Diego County Water Authority	20,062	Drinking Water
<b>TOTAL</b>		<b>20,062</b>	

**Table 6-9: Water Supplies - Projected**

Water Supply	Description	Projected Water Supply				
		2020	2025	2030	2035	2040
Purchased or Imported Water	San Diego County Water Authority	20,810	20,820	20,830	20,850	20,660
Groundwater		0	0	0	0	0
Recycled Water		0	0	0	0	0
<b>TOTAL</b>		<b>20,810</b>	<b>20,820</b>	<b>20,830</b>	<b>20,850</b>	<b>20,660</b>

NOTES: Only "Verifiable" projects are included in this table. Verifiable = CEQA satisfied, permits in hand, or contracts have been executed.

## 6.5 Climate Change – Influence on Water Supply

CWA has evaluated the potential influence of climate change on its supply, on which OMWD is reliant for its potable supply. The following summarizes CWA’s analysis and is excerpted from the April 2016 draft of their Regional UWMP.

### [Excerpt from CWA Draft Regional UWMP, April 2016]

The term climate change refers to changes in long-term averages of daily weather. Changes to climate will be gradual, providing water supply agencies the ability to adapt planning strategies to manage for the supply uncertainties. The effect on supply would be gradual and captured in each five-year update to the UWMP.

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

- **Loss of Natural Snowpack Storage.** Rising temperatures reduce snowpack in the Sierra Nevada because more precipitation falls as rain, and snowmelt occurs sooner. Snowpack in the Sierra Nevada is the primary source of supply for the State Water Project. Snowpack is often considered a large surface “reservoir,” where water is slowly released between April and July each year. Much of the state’s water infrastructure was designed to capture the slow spring runoff and deliver it during the drier summer and fall months. The California Department of Water Resources projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050.
- **Sea Level Rise.** Rising sea levels could increase the risk of damage to water and water recycling facilities from storms, high-tide events, and erosion of levees. A potential catastrophic levee failure in the Delta could interrupt supplies from the State Water Project, potentially reducing supply deliveries to the San Diego region from Metropolitan. In addition, rising sea levels could cause saltwater intrusion into the Delta, degrading drinking water quality. More freshwater releases from upstream reservoirs would be required to repel the sea to maintain salinity levels for municipal, industrial, and agricultural uses.
- **Changes in Average Precipitation and Runoff Volume.** The effect of climate change on overall precipitation and runoff volumes is still unclear and highly uncertain. For example, a number of studies conclude that the flow of the Colorado River may be reduced by climate change, but a wide disparity exists on the predicted volume. The yield from local surface water resources could potentially be reduced, if annual runoff volumes are reduced due to a decline in precipitation or there is an increase in evapotranspiration in reservoirs. It must be highlighted that research is still highly unclear on how precipitation levels may be impacted by climate change.
- **Change in Frequency and Intensity of Droughts.** Warming temperatures, combined with potential changes in rainfall and runoff patterns, could exacerbate the frequency and intensity of droughts.

## 7.0 Water Supply Reliability

The District is currently 100 percent reliant on SDCWA for its potable water supply and therefore, the water supply reliability assessment in this chapter is based upon the SDCWA assessment from its 2015 Regional UWMP ([www.sdcwa.org/uwmp](http://www.sdcwa.org/uwmp)). SDCWA has a number of sources of water including MWD, the recently completed Carlsbad Seawater Desalination Project, and water conserved from the Imperial Irrigation District and the lining of the All American and Coachella Canals and other sources as described in their UWMP. The District is investigating several water resource projects that would reduce dependence on SDCWA, as described in section 6. These projects are in the feasibility stage of analysis and are not yet considered in the reliability assessment.

### 7.1 Constraints on Water Sources

Except for dry years, the supply from SDCWA is very consistent in quantity and quality, and with sufficient capacity to meet summer peak demands without any delivery constraints. SDCWA's and MWD's main sources of supply are the State Water Project and the Colorado River and both sources face legal, environmental, and climatic challenges. To address these challenges to the State Water Project supply, DWR is going through a permitting process known as California WaterFix and EcoRestore. It has been documented that the Colorado River supply is oversubscribed, and to address this SDCWA and MWD have implemented a number of conservation, land fallowing, transfer, and storage projects. The seven Colorado River Basin states are working cooperatively to develop strategies to better match supply and demand. Both the State Water Project and the Colorado River are described in the SDCWA and MWD 2015 Regional UWMPs.

The RMWD potable water supply is produced by the SDCWA Carlsbad Seawater Desalination Project, the SDCWA Twin Oaks Valley Water Treatment Plant in San Marcos, or the MWD Skinner Water Treatment Plant in Riverside County.

RMWD meets or exceeds all state and federal water quality standards for drinking water. RMWD publishes an annual water quality report, the Consumer Confidence Report, which is mailed to all its customers, posted on its web page, and displayed in its lobby. The most recent report is available at: [www.rainbowmwd.com/2016-table-d-water-reports](http://www.rainbowmwd.com/2016-table-d-water-reports)). RMWD does not anticipate any shortage or impact to availability of supply due to water quality issues. SDCWA's Regional UWMP Section 7 provides additional information on the quality of water provided to RMWD.

### 7.2 Reliability by Type of Year

Historically, the SDCWA supply has been very reliable with only occasional reductions during droughts in California or the Colorado River Watershed. **Table 7-1** shows the basis of water year data and is based on SDCWA's UWMP. SDCWA supplies of conserved water from its Imperial Irrigation District transfer and the All American and Coachella Canal Lining projects are considered to be "drought-resilient." For dry-year analysis, SDCWA assumes that the MWD supplies will be allocated according to its preferential right formula. Additional shortages are handled through the use of SDCWA's carryover storage and management actions such that there are no shortages to member agencies for the single and multiple dry-year scenarios. SDCWA's dry-year supplies are described in Section 11.2.4 of its Regional UWMP. The carryover storage capacity is nearly 100,000 AF in the San Vicente Reservoir, the Semitropic-Rosamond Water Bank Authority and the Semitropic Water Bank. SDCWA may also consider securing transfer

supplies during dry years and in 2009 acquired 20,000 AF from Placer County Water Agency in northern California.

**Table 7-1: Basis of Water Year Data**

Year Type	Base Year	% of Average Supply
Average Year	2013	100%
Single-Dry Year	1989	100%
Multiple-Dry Years 1st Year	2015	100%
Multiple-Dry Years 2nd Year	2015	98%
Multiple-Dry Years 3rd Year	2015	92%

**NOTES:** SDCWA supplies from its Imperial Irrigation District transfer, the All American and Coachella Canal Lining projects, and the Carlsbad Seawater Desalination project are considered "drought- resilient." SDCWA assumes that MWD supplies will be allocated according to its preferential right formula. In the second dry year in 2035, a shortage of 2 percent is forecast after using carryover storage supplies and will be handled with management actions. In the third dry year starting in 2025, shortages of from 1 to 8 percent are forecast after using carryover storage supplies and will be handled with management actions.

## 7.3 Supply and Demand Assessment

### 7.3.1 SDCWA Demand Forecast

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

### 7.3.2 Normal Year Supply and Demand Assessment

If MWD, SDCWA, and RMWD supplies are developed as planned, along with achievement of the Water Conservation Bill of 2009 retail conservation target, no shortages are anticipated within RMWD's service area in a normal year through 2040. As part of preparation of its UWMP, SDCWA identified RMWD's demands and in turn, MWD identified SDCWA's demands in MWD's UWMP, which are shown to be adequate to cover the demands for the entire San Diego region.

### 7.3.3 Dry Year Supply and Demand Assessment

SDCWA identified 1989 as the representative single dry-year and its weather patterns were substituted into the CWA-MAIN model to estimate demands. The CWA-MAIN model could not be applied for multiple dry-year forecasts because it was constructed to forecast in discreet 12-month periods. Instead, SDCWA correlated trends in historical deliveries with multi-year trends in observed precipitation to construct a set of consecutive dry year forecasts. RMWD calculated ratios of SDCWA dry year to normal year demands and applied the ratios to RMWD normal year demands to estimate dry year demands. More information on the forecasts can be found in the SDCWA UWMP.

The procedure to allocate SDCWA's supplies to its member agencies is defined in the SDCWA Water Shortage and Drought Response Plan dated May 2006 and updated in April 2010 and November 2014. RMWD has utilized this methodology to estimate its dry year allocation. The basic steps include:

1. Forecast RMWD normal demands.
2. Subtract water that is in the Transitional Special Agricultural Rate program to obtain net demands.
3. Adjust the demands for growth by adding the population increase times the 2020 urban water use target.
4. Add 30 percent of the average future verifiable local supplies to obtain the adjusted base period demands.
5. Divide the adjusted base period demands by the total SDCWA normal demands to get the RMWD percentage. SDCWA demands were increased by 30 percent to account for all member agencies implementing step 4.
6. Apply this percentage to SDCWA dry-year supplies.

**Tables 7-2, 7-3, and 7-4** provide normal, single dry year, and multiple dry years supply and demand comparisons.

**Table 7-2: Normal Year Supply and Demand Comparison**

	2020	2025	2030	2035	2040
Supply totals (AF)	20,810	20,820	20,830	20,850	20,660
Demand totals (AF)	20,810	20,820	20,830	20,850	20,660
<b>Deficit (AF)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% of Demands</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>

**Table 7-3: Single Dry Year Supply and Demand Comparison**

	2020	2025	2030	2035	2040
Demand totals	22,188	22,296	22,321	22,459	22,188
Supply totals	21,362	20,849	20,753	20,915	21,362
<b>Deficit (AF)</b>	<b>826</b>	<b>1,447</b>	<b>1,568</b>	<b>1,544</b>	<b>826</b>
<b>% of Demands</b>	<b>4%</b>	<b>6%</b>	<b>7%</b>	<b>7%</b>	<b>4%</b>

Notes: Same as first year of Multiple Dry Year analysis from Table 7-4, per Water Authority supply allocation policy. Assumes dry-year increase in demands. Assumes minimum 15 percent reduction in TSAWR program deliveries.

**Table 7-4: Multiple Dry Years Supply and Demand Comparison**

		2020-22	2025-27	2030-32	2035-37
<b>First year</b>	Demand totals (AF)	22,188	22,296	22,321	22,459
	Supply totals (AF)	21,362	20,849	20,753	20,915
	<b>Deficit (AF)</b>	<b>826</b>	<b>1,447</b>	<b>1,568</b>	<b>1,544</b>
	<b>% of Demands</b>	<b>4%</b>	<b>6%</b>	<b>7%</b>	<b>7%</b>
<b>Second year</b>	Demand totals	22,051	22,372	22,418	22,516
	Supply totals	21,105	20,476	20,894	21,224
	<b>Deficit (AF)</b>	<b>946</b>	<b>1,896</b>	<b>1,524</b>	<b>1,292</b>
	<b>% of Demands</b>	<b>4%</b>	<b>8%</b>	<b>7%</b>	<b>6%</b>
<b>Third year</b>	Demand totals	21,922	22,449	22,516	22,573
	Supply totals	20,868	20,745	20,724	20,670
	<b>Deficit (AF)</b>	<b>1,054</b>	<b>1,704</b>	<b>1,792</b>	<b>1,903</b>
	<b>% of Demands</b>	<b>5%</b>	<b>8%</b>	<b>8%</b>	<b>8%</b>

Notes: Per Water Authority supply allocation policy. Assumes dry-year increase in demands. Assumes minimum 15 percent reduction in TSAWR program deliveries.

## 7.4 Regional Supply Reliability

SDCWA and its member agencies are considering many options to maximize the use of local water resources and minimize the need to import water from other regions including groundwater, water recycling, potable reuse, and seawater desalination. San Diego County has limited surface water resources and these are currently being managed to the fullest yield possible. The Water Authority's projections of verifiable supplies of local groundwater, recycled water, and potable reuse projects are summarized in **Table 7-A**.

**Table 7-A: Regional Options to Maximize the Use of Local Water**

Option	2015	2020	2025	2030	2035	2040
Groundwater	23,773	31,240	32,430	33,470	37,470	33,470
Recycled Water	32,595	47,460	48,825	48,959	49,159	49,459
Potable Reuse	0	3,360	5,000	5,000	5,000	5,000

**Groundwater**

The local groundwater projects include the City of Oceanside and Sweetwater Authority brackish groundwater recovery projects known as the Mission Basin Desalter and the Richard A. Reynolds Desalination Facility. Other future projects not included in the table are the Otay Water District Rancho del Rey Well, and the Fallbrook Public Utilities District – Marine Corps Base (MCB) Camp Pendleton Conjunctive Use Project.

**Recycled Water**

The recycled water projects that contribute to the growth in supplies shown in Table 7-A are the City of Oceanside San Luis Rey WRF expansion, the Carlsbad Water Recycling Facility expansion and the City of Escondido Advanced Water Treatment for Agriculture Project. Additional projects are planned by Padre Dam MWD, MCB Camp Pendleton, and Santa Fe Irrigation District.

**Potable Reuse**

The potable reuse volumes shown in Table 7-A are for the City of Oceanside Indirect Potable Reuse Project. A very significant planned project not included in the table is the City of San Diego Pure Water San Diego project with a goal of 83 million gallons per day (93,000 AF/YR) by 2035. The East County Potable Reuse Program is planned for a minimum of 2 mgd (2,240 AF/YR).

**Seawater Desalination**

SDCWA has contracted for the purchase of 56,000 AF/YR from the Carlsbad Seawater Desalination Project and operation began in December 2015. Otay Water District is in discussions with Consolidated Water Company, Ltd. to purchase up to 56,000 acre-feet of desalinated seawater from a plant proposed for Rosarito Beach, Baja California, Mexico. The Otay Water District has completed an Environmental Impact Report/ Environmental Impact Statement and is working with the Department of State to obtain a Presidential Permit to convey the water across the international border. SDCWA along with other U.S. and Mexican agencies have developed a conceptual level project known as the Rosarito Beach Binational Desalination Project which could produce up to 56,000 AF/YR. The partners have completed a feasibility analysis of the site, an assessment of demands, and a review of environmental permitting. There are no continuing studies currently underway.

An additional planned project is the SDCWA MCB Camp Pendleton Seawater Desalination Project with a planned capacity of between 56,000 and 168,000 AF/YR. The feasibility of this project is being evaluated as a long-term resources strategy to manage future supply uncertainties. SDCWA and MCB Camp Pendleton have signed a memorandum of understanding to provide a framework for cooperation during the performance of additional technical and environmental studies. Seawater intake technologies are currently being tested at MCB Camp Pendleton.

A more complete description of these options can be found in the SDCWA Regional UWMP, Sections 4 and 5.

## 7.5 Managing Supply Uncertainties and Vulnerabilities

To address the various uncertainties and vulnerabilities of its water supply, the Water Authority has identified a range of adaptive strategies as described in Section 10 of its 2015 Regional UWMP. These strategies address uncertainties relative to legal and environmental issues on the State Water Project and Colorado River Aqueduct supplies, climate change, and other factors. As the District is dependent on CWA for its potable supply, the Water Authority strategies address the water supply planning needs of the District. As noted in Section 7.1, the District's supply is not subject to any seasonal constraints or vulnerabilities.

The following summarizes CWA's strategies for addressing supply uncertainties and vulnerabilities, and is excerpted from Section 10 the April 2016 draft of the Water Authority's Regional UWMP. (The Table numbering is from the CWA document and does not follow the chapter numbering used in the RWMD UWMP.)

### [Excerpt from CWA Draft Regional UWMP, April 2016]

Table 10-3 contains strategies the Water Authority can employ to aid in the implementation of the supplies identified in the projected resource mix and manage uncertainty scenarios. The strategies focus on programs, many of which are already being implemented consistent with Water Authority Board policy.

**Table 10-3. Potential Common Strategies to Strengthen Implementation of Projected Resource Mix and Manage Uncertainty Scenarios**

<b>Potential Water Authority Policies/Programs</b>
<p><b>Foundational Strategy</b></p> <ul style="list-style-type: none"> <li>• Reduce reliance on Metropolitan supply sources to ensure the existing and projected water resource mix is reliable and drought-resilient</li> </ul>
<p><b>Member Agency Local Projects</b></p> <ul style="list-style-type: none"> <li>• Provide technical assistance to member agencies in the planning, design, and construction of local projects</li> <li>• Advocate at local, state, and federal level for minimizing regulatory constraints and enacting acceptable and practicable regulatory standards that allow member agencies to maximize local supply project development.</li> <li>• Advocate for state and federal funding for local projects and work with agencies to ensure projects qualify for funding.</li> </ul>
<p><b>Water Conservation</b></p> <ul style="list-style-type: none"> <li>• Advocate at local, state, and federal level for minimizing regulatory constraints and enacting acceptable and practicable regulatory standards that allow member agencies to maximize local supply project development.</li> <li>• Advocate for state and federal funding for local projects and work with agencies to ensure projects qualify for funding.</li> </ul>
<p><b>Climate Change</b></p> <ul style="list-style-type: none"> <li>• Encourage focused scientific research on climate change to identify the impacts on the San Diego region's imported and local water supplies.</li> </ul>

In addition to the policies and programs identified in Table 10-3, Table 10-4 provides a list of the potential management strategies that the Water Authority and member agencies can take in regard to managing the uncertainty scenarios and filling potential gaps. As discussed in Section 9.5, development of additional planned projects is critical in order to continue reducing the region's

reliance on Metropolitan supply sources and increase the region's self-reliance. In addition, member agency projects, such as potable reuse, not only provide the agency a supply reliability benefit, but can also provide other benefits, such as reducing wastewater flows to a downstream treatment plant and ultimately the ocean.

**Table 10-4. Potential Strategies to Manage Uncertainty Scenarios (2035)**

<b>Potential Strategy</b>	<b>Estimated Yield (AF)</b>
<b>Member Agency Potential Additional Planned Local Projects<sup>1</sup></b>	
• Additional Planned Recycled Water and Brackish Groundwater	3,296
• Potable Reuse	106,099
• Fallbrook PUD/Camp Pendleton Groundwater Recharge and Recovery Project	3,100
• Otay WD Rosarito Beach Desalination Project	16,100
Total Additional Planned Local Projects (Member Agencies):	<b>128,595</b>
<b>Water Authority Potential Strategies</b>	
• Potential Regional Seawater Desalination Facility (Camp Pendleton Phase I) <sup>2</sup> :	56,000
• Regional Shortage Management Actions (Dry-year transfers and potential extraordinary conservation savings)	--3
Total Minimum Estimated Yield from Potential Strategies:	<b>184,595</b>
<ol style="list-style-type: none"> <li>1. The estimated yields from the additional planned local supply projects are from the member agencies and the development and implementation of these supplies rests with the member agencies.</li> <li>2. Ultimate decision to move forward on construction of the proposed Pendleton desalination project would be considered in context of the development of member agency local supplies, such as potable reuse, changes in imported supply reliability, and regional water demand levels.</li> <li>3. Availability of dry-year supplies is described in Section 11.2.4.</li> </ol>	

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

## 8.0 Water Shortage Contingency Planning

RMWD has prepared for periods of water supply shortage by adopting on June 23, 2015 its Drought Response Conservation Program Ordinance (No. 15-08), which may be considered a water shortage contingency ordinance. The ordinance provides for progressively severe stages of water use restrictions as necessary to accomplish service area-wide water use reductions of up to and over 40 percent. The ordinance is summarized below and a copy of the ordinance can be found in **Appendix G**. The ordinance describes the effects that a drought or water supply shortage may have on RMWD's water supply, its water conservation stages, and the implementation, violation, and penalties of the stages.

RMWD participated in the cooperative effort between the San Diego County water agencies general managers and SDCWA in the creation of the Regional Drought Response Plan and then incorporated it in developing its own plan. Additional discussion regarding SDCWA's Drought Response Plan can be found in Section 11 of their 2015 UWMP.

### 8.1 Stages of Action

The RMWD Water Supply Shortage Ordinance contains four (4) levels (stages) of action as shown in **Table 8-1** below. Level 1 is voluntary while Levels 2 through 4 are mandatory and include options for assessing penalties for violations.

**Table 8-1: Stages of Water Shortage Contingency Plan**

Stage	Percent Supply Reduction	Water Supply Condition
1	10%	Reasonable probability that there will be supply shortages and that a consumer demand reduction is required in order to ensure that sufficient supplies will be available to meet anticipated demands, or due to drought and/or other water supply reductions.
2	20%	Due to cutbacks caused by a drought or other reduction in supplies, a consumer reduction is required to have sufficient supplies available to meet anticipated demands. Required to comply with emergency regulations imposed on the District by state or federal agencies.
3	40%	When the SDCWA notifies its member agencies that, due to increasing cutbacks caused by a drought or reduction of supplies, a consumer demand reduction is required in order to have sufficient supplies available to meet anticipated demands. If required to comply with emergency regulations imposed upon the District by state or federal agencies.
4	40+%	When the SDCWA Board of Directors declares a water shortage emergency pursuant to California Water Code Section 350 and notifies its member agencies that Level 4 requires a demand reduction in order for the RMWD to have maximum supplies available to meet anticipated demands. If required to comply with emergency regulations imposed upon the District by state or federal agencies.

NOTES: Based on RMWD Water Supply Shortage Ordinance No. 15-08 dated June 23, 2015. Level (Stage) 4 addresses a water shortage of 50%.

## 8.2 Prohibitions on End Uses

The RMWD Water Supply Shortage Ordinance contains restrictions and prohibitions on end uses, associated with Levels 1 through 4, as shown in **Table 8-2**.

**Table 8-2: Restrictions and Prohibitions on End Uses**

Restrictions and Prohibitions on End Users	Stage	Additional Explanation or Reference	Penalty?
1. Other - Prohibit use of potable water for washing hard surfaces	1,2,3,4		No
2. Landscape - Restrict or prohibit runoff from landscape irrigation	1,2,3,4		No
3. Landscape - Limit landscape irrigation to specific times	1,2,3,4	Before 10 AM and after 6 PM Residential and Commercial	No
4. Other - Require automatic shut-off hoses	1,2,3,4	Includes vehicle washing.	No
5. Other - Customers must repair leaks, breaks, and malfunctions in a timely manner.	1,2,3,4	Time to repair is dictated by Level	No
6. Water Features – Use re-circulated water to operate ornamental fountains	1,2,3,4		No
7. CII - Restaurants may only serve water upon request	1,2,3,4		No
8. CII - Lodging establishment must offer opt out of linen service	1,2,3,4		No
9. Other – Use recycled or non-potable water for construction purposes, when available.	1,2,3,4		No
10. Landscape - Limit landscape irrigation to specific days	2, 3, 4	Number of days depends on Level	Yes
11. Landscape - Other landscape restriction or prohibition	2, 3, 4	Limit time per irrigation system station	Yes
12. Landscape - Other landscape restriction or prohibition	2,3,4	Discontinue landscape irrigation during and within 48 hours of measureable rain	Yes
13. Water Features - Restrict water use for pools, spas, decorative water features, such as fountains, or other water features	3, 4		Yes
14. Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	3, 4		Yes
15. Other - No new potable water service and no statements of immediate ability to serve or provide water service.	3,4		
16. Other - Suspend considerations of annexations.	3,4		
17. Other – Water allocation	3, 4	Option to establish a water allocation for property served by the District.	Yes
18. Landscape - Prohibit all landscape irrigation	4	Certain uses are exempt.	Yes

**NOTES:** Based on RMWD Water Supply Shortage Ordinance No. 15-08 dated June 23, 2015. Penalties may be imposed at Levels (Stages) 2, 3, and 4.

## 8.3 Penalties, Charges, Other Enforcement of Prohibitions

Each stage of the District’s water shortage ordinance has specific prohibitions, penalties and consumption reduction methods. The violation of the ordinance is a misdemeanor pursuant to sections 350-358, 375-377 and 71640-71644 of California Water Code and punishable by imprisonment in the county jail for not more than 30 days or a fine not to exceed \$1000 or both. The complete text of the ordinance is included in **Appendix G**.

## 8.4 Consumption Reduction Methods

The RMWD consumption reduction methods, along with the Level at which they are implemented, are listed in **Table 8-3**.

**Table 8-3: Water Shortage Contingency Plan Consumption Reduction Methods**

Reduction Methods	Stage	Notes
1. Expand Public Information	1	RMWD, SDCWA, and MWD efforts
2. Increase Meter Read Frequency	1	The District has included funds to implement Advanced Metering Infrastructure (AMI) throughout its service area.
3. Offer Water Use Surveys	1	By SDCWA and Mission Resource Conservation District (MRCD)
4. Provide Rebates on Plumbing Fixtures and Devices	1	MWD provided rebates.
5. Provide Rebates for Landscape Irrigation Efficiency	1	MWD provided rebates.
6. Provide Rebates for Turf Replacement	1	MWD provided rebates for turf replacement in the District until funding exhausted.
7. Reduce System Water Loss	1	Ongoing process
8. Provide Rebates on Plumbing Fixtures and Devices	1	SDCWA and MWD provide water saving devices including buckets, soil moisture sensors, rain gauges, hose shut off nozzles, toilet leak detecting dye, low-flow faucet aerators, and reusable water bottles.
9. Increase Water Waste Patrols	2	RMWD has an online form and also a hotline to report waste.
10. Moratorium or Net Zero on New Connections	3	Optional
11. Implement or Modify Drought Rate Structure or Surcharge	2	Level 2 Drought Rates have been in effect since the Governor's conservation order.

## 8.5 Determining Actual Water Use Reductions

To measure effectiveness of the water use reduction methods imposed, the District monitors customer sales and daily delivery system deliveries. All District customers are metered.

## 8.6 Revenue and Expenditure Impacts

The District's rate structure includes a combination of fixed meter charges and variable tiered volumetric rates. In addition, the rate structure includes automatic adjustments tied to implementation of the progressive stages of the District's drought response ordinance. In this manner, water rates and District revenues automatically adjust during drought restrictions to maintain revenues approximately equal to operating costs, such that the District suffers no adverse financial effects.

## 8.7 Catastrophic Supply Interruption

A catastrophic water shortage occurs when a disaster such as an earthquake results in insufficient available water to meet the region's needs or eliminates access to imported water supplies. The Water Authority's Emergency Response Plan (ERP) and the Emergency Storage Project (ESP) are designed to protect public health and safety and to prevent or limit economic damage that could occur from a severe shortage of water supplies.

### **Emergency Response Plan**

The ERP covers concepts such as the authorities, policies, and procedures associated with emergency response activities, emergency staffing, management, and organization required to assist in mitigating any significant emergency or disaster, mutual aid agreements and covenants that outline the terms and conditions under which mutual aid assistance will be provided and Pre-emergency planning and emergency operations procedures. The ESP identifies and implements plans to acquire additional storage facilities. The ERP includes:

- Authorities, policies, and procedures associated with emergency response activities;
- Emergency Operations Center activities, including activation and deactivation guidelines;
- Multi-agency and multi-jurisdictional coordination, particularly between the Water Authority, its member agencies (including the District), and Metropolitan;
- Emergency staff, management, and organization required to assist in mitigating any significant emergency or disaster;
- Mutual Aid agreements and covenants that outline the terms and conditions under which mutual aid assistance will be provided; and
- Pre-emergency planning and emergency operations procedures.

### **Emergency Storage Project**

The ESP is a system of reservoirs, pipelines, and other facilities that work together to store and move water around the county in the event of a natural disaster. The last phase of the project, which includes facilities necessary to serve the northern portions of RMWD, is expected to be completed by 2019. When completed, the ESP will provide the capacity to delivery at least 75% of normal peak summer demands throughout the Water Authority service area for a duration of two months, until repairs to the supply system can be implemented.

Additional information on the ESP is available for review on the Water Authority's website, at [www.sdcwa.org/emergency-storage-project](http://www.sdcwa.org/emergency-storage-project).

## 8.8 Minimum Supply Next Three Years

Agencies are required to estimate the minimum water supply available during each of the next three years, based on the driest three-year historic sequence, compared with a normal water year. To determine the minimum supplies potentially available to the region, SDCWA made the same assumptions contained in their multi dry-year analysis. **Table 8-4** presents the District minimum supply for the next three years and was estimated based on the SDCWA minimum supply for the next three years and the Water Shortage and Drought Response Plan allocation methodology. Based on current supply and storage conditions statewide, SDCWA is not currently forecasting this supply scenario.

**Table 8-4: Minimum Supply Next Three Years**

	2017	2018	2019
Available Supply (AF)	17,803	18,560	19,408

Notes: Based on Table 11-5 SDCWA 2015 UWMP and CWA Water Shortage and Drought Response Plan. Assumes minimum 15 percent reduction in TSAWR program deliveries.

## 9.0 Demand Management Measures

### 9.1 Overview – Conservation Best Management Practices

Demand Management Measures are programs and policies to conserve water. In the District service area, the District, SDCWA, and MWD together provide a comprehensive package of demand management programs and policies tailored to the needs of the District.

In California, urban water conservation has been studied, refined, and structured into Best Management Practices (BMPs) by the California Urban Water Conservation Council (CUWCC). As a member of CUWCC, the district has signed the CUWCC *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU). Under the terms of the MOU, the District has agreed to follow the BMPs defined by CUWCC, and to report biannually to CUWCC on the District's compliance. The District's most recent BMP report, for the two-year period ending 2014, is included in **Appendix H**. The report documents that the District, either individually or in cooperation with SDCWA and MWD, has implemented each of the BMPs in its service area and is in compliance with MOU.

The CUWCC Conservation BMPs, and the District's compliance status, are summarized in **Table 9-1**.

**Table 9-1. Water Conservation BMPs and District Compliance**

Type	Category	BMP	Description	Conservation Programs	Compliance
Foundation	Operations Practices	1.1.1	Conservation Coordinator	Full-time Coordinator	Yes
		1.1.2	Water Waste Prevention	By Ordinance	Yes
		1.1.3	Wholesale Agency Assistance Programs	Education Programs (Public and School) (SDCWA and MWD)	Yes
		1.2	Water Loss Control (System Water Audits, Leak Detection and Repair)	Distribution System Auditing Program	Yes
		1.3	Metering with Commodity rates	Metered By Type	Yes
		1.4	Retail Conservation Pricing	By Ordinance	Yes
	Education Programs	2.1	Public Information Programs	Water Conservation Garden Newsletters , Website, Events	Yes
		2.2	School Education Programs	Classroom Kits Video Library Awards Programs	Yes
Programmatic	Residential	3.1	Residential Assistance Program (Plumbing Retrofit)	Showerhead Distribution	Yes
		3.2	Landscape Water Survey	Residential Survey Program Residential Weather-Based Irrigation Controller Program	Yes
		3.3	High-Efficiency Washing Machine Rebate Programs	Residential High-Efficiency Clothes Washer (HEW) Program	Yes
		3.4	WaterSense Spec. Toilets	Residential Voucher Program	Yes
	Commercial Industrial	4	Commercial, Industrial, Institutional (CII)	CII Voucher Program	Yes
	Landscape	5	Landscape	SDCWA program	Yes

## 10.0 Plan Adoption, Submittal, Implementation

This section contains information required by the Act documenting compliance with plan adoption, submittal, and implementation requirements.

### **Inclusion of all 2015 Data**

The District's 2015 UWMP includes water use and planning data for fiscal year 2015, July 1, 2014 through June 30, 2015.

### **Notice of Public Hearing**

The District provided notice to each of the land use jurisdictions within its service area that it was updating its UWMP, and that it would hold a public hearing on May 24 to receive public comment on a draft of the plan. Notified entities are listed in **Table 10-1**.

**Table 10-1: Notification to Cities and Counties**

Entity	60 Day Notice of Preparation	Notice of Public Hearing
San Diego County	X	X
Vista	X	X
Oceanside	X	X

In addition, the District provided legal public notice of the May 24 public hearing via advertisement in the Village News and Daily Transcript newspapers beginning two weeks prior to the hearing. The notice indicated the time and place of the hearing as well as the location where the plan is available for public inspection. A copy of the notice is included in **Appendix C**.

### **Public Hearing and Adoption**

The District held a public hearing to receive comment on the Draft 2015 UWMP. The hearing was held on May 24, 2016, at 1:00 p.m. at the District's offices. Subsequently, on June 28 the District's Board of Directors adopted the 2015 UWMP at its regular meeting of June 28, 2016. A copy of the adoption resolution is included in **Appendix C**.

### **Plan Submittal**

The RMWD 2015 UWMP was submitted to DWR on June 30, 2016, in advance of the July 1 due date. The plan and associated data files were submitted using the DWR WUedata online plan submittal tool. Plan copies will also be submitted to the County of San Diego, the City of Oceanside, the City of Vista, and to the California State Library<sup>3</sup> within 30 days of plan adoption.

### **Public Availability**

The adopted RMWD 2015 UWMP is available at <http://www.rainbowmwd.com/>.

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<sup>3</sup> California State Library / Government Publications Section  
Attention: Coordinator, Urban Water Management Plans  
P.O. Box 942837 / Sacramento, CA 94237-0001

# **Appendix A**

## **Urban Water Management Plan Act Text**

**California Water Code Division 6, Part 2.6.**

**Chapter 1. General Declaration and Policy §10610-10610.4**

**Chapter 2. Definitions §10611-10617**

**Chapter 3. Urban Water Management Plans**

Article 1. General Provisions §10620-10621

Article 2. Contents of Plans §10630-10634

Article 2.5. Water Service Reliability §10635

Article 3. Adoption And Implementation of Plans §10640-10645

**Chapter 4. Miscellaneous Provisions §10650-10656**

## **Chapter 1. General Declaration and Policy**

### SECTION 10610-10610.4

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

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

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

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

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

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

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

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

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

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

## **Chapter 2. Definitions**

### SECTION 10611-10617

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

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

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

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

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

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses,

reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

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

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

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

## **Chapter 3. Urban Water Management Plans**

### **Article 1. General Provisions**

#### **SECTION 10620-10621**

10620. (a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).
- (b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.
- (c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.
- (d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.
- (2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that

share a common source, water management agencies, and relevant public agencies, to the extent practicable.

- (e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.
  - (f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.
10621. (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero, except as provided in subdivision (d).
- (b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.
  - (c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).
  - (d) Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.

## **Article 2. Contents of Plan**

### **SECTION 10630-10634**

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.
10631. A plan shall be adopted in accordance with this chapter that shall do all of the following:
- (a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.
  - (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of

water available to the supplier, all of the following information shall be included in the plan:

- (1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.
  - (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.
  - (3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
  - (4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
- (c) (1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:
- (A) An average water year.
  - (B) A single-dry water year.
  - (C) Multiple-dry water years.
- (2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

- (d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.
- (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:
  - (A) Single-family residential.
  - (B) Multifamily.
  - (C) Commercial.
  - (D) Industrial.
  - (E) Institutional and governmental.
  - (F) Landscape.
  - (G) Sales to other agencies.
  - (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
  - (I) Agricultural.
  - (J) Distribution system water loss.
- (2) The water use projections shall be in the same five-year increments described in subdivision (a).
- (3) (A) For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.
  - (B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.
- (4) (A) If available and applicable to an urban water supplier, water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

- (B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:
- (i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.
  - (ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.
- (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:
- (1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.
  - (B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:
    - (i) Water waste prevention ordinances.
    - (ii) Metering.
    - (iii) Conservation pricing.
    - (iv) Public education and outreach.
    - (v) Programs to assess and manage distribution system real loss.
    - (vi) Water conservation program coordination and staffing support.
    - (vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.
  - (2) For an urban wholesale water supplier, as defined in Section 10608.12, a narrative description of the items in clauses (ii), (iv), (vi), and (vii) of subparagraph (B) of paragraph (1), and a narrative description of its distribution system asset management and wholesale supplier assistance programs.
- (g) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water

use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

- (h) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
- (i) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivision (f) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.
- (j) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.1. (a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

- (b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

10631.2. (a) In addition to the requirements of Section 10631, an urban water management plan may, but is not required to, include any of the following information:

- (1) An estimate of the amount of energy used to extract or divert water supplies.
- (2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.
- (3) An estimate of the amount of energy used to treat water supplies.
- (4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.
- (5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.
- (6) An estimate of the amount of energy used to place water into or withdraw from storage.
- (7) Any other energy-related information the urban water supplier deems appropriate.

(b) The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has

submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

- (i) Compliance on an individual basis.
  - (ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.
- (B) The department may require additional information for any determination pursuant to this section.
- (3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.
- (c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).
  - (d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.
  - (e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

- (f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

10631.7. The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers, environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

10632. (a) The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:
- (1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions that are applicable to each stage.
  - (2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.
  - (3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.
  - (4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.
  - (5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are

appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

- (6) Penalties or charges for excessive use, where applicable.
  - (7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
  - (8) A draft water shortage contingency resolution or ordinance.
  - (9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.
- (b) Commencing with the urban water management plan update due July 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

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

- (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
- (b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.
- (c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
- (d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

- (e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.
- (f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.
- (g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

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

## **Article 2.5. Water Service Reliability**

### **SECTION 10635**

10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.
- (b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.
- (c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

- (d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

### **Article 3. Adoption and Implementation of Plans**

#### **SECTION 10640-10645**

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.

After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. (a) (1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1) shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

- (b) (1) Notwithstanding Section 10231.5 of the Government Code, the department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part.

The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

- (2) A report to be submitted pursuant to paragraph (1) shall be submitted in compliance with Section 9795 of the Government Code.

- (c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section 10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

- (2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).

- (3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

## **Chapter 4. Miscellaneous Provisions**

### **SECTION 10650-10656**

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

- (a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

- (b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.
10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.
10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.
10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.
10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.
10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.
10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26

(commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

**Appendix B**  
**Sustainable Water Use and Demand Reduction (SB X7-7)**

**California Water Code Division 6, Part 2.55.**

- Chapter 1. General Declarations and Policy §10608-10608.8**
- Chapter 2. Definitions §10608.12**
- Chapter 3. Urban Retail Water Suppliers §10608.16-10608.44**
- Chapter 4. Agricultural Water Suppliers §10608.48**
- Chapter 5. Sustainable Water Management §10608.50**
- Chapter 6 Standardized Data Collection §10608.52**
- Chapter 7 Funding Provisions §10608.56-10608.60**
- Chapter 8 Quantifying Agricultural Water Use Efficiency §10608.64**

**Chapter 1. General Declarations and Policy**

SECTION 10608-10608.8

10608. The Legislature finds and declares all of the following:

- (a) Water is a public resource that the California Constitution protects against waste and unreasonable use.
- (b) Growing population, climate change, and the need to protect and grow California's economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.
- (c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.
- (d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve streamflows, and reduce greenhouse gas emissions.
- (e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.
- (f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.
- (g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.
- (h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.

- (i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

10608.4. It is the intent of the Legislature, by the enactment of this part, to do all of the following:

- (a) Require all water suppliers to increase the efficiency of use of this essential resource.
- (b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.
- (c) Measure increased efficiency of urban water use on a per capita basis.
- (d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20-percent reduction.
- (e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.
- (f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.
- (g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.
- (h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.
- (i) Require implementation of specified efficient water management practices for agricultural water suppliers.
- (j) Support the economic productivity of California's agricultural, commercial, and industrial sectors.
- (k) Advance regional water resources management.

- 10608.8. (a) (1) Water use efficiency measures adopted and implemented pursuant to this part or Part 2.8 (commencing with Section 10800) are water conservation measures subject to the protections provided under Section 1011.
- (2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision (b) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to

January 1, 2021. Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

- (3) To the extent feasible, the department and the board shall provide for the use of water conservation reports required under this part to meet the requirements of Section 1011 for water conservation reporting.
- (b) This part does not limit or otherwise affect the application of Chapter 3.5 (commencing with Section 11340), Chapter 4 (commencing with Section 11370), Chapter 4.5 (commencing with Section 11400), and Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code.
- (c) This part does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may have greater effects on water use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors.
- (d) The requirements of this part do not apply to an agricultural water supplier that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect. After the expiration of the Quantification Settlement Agreement, to the extent conservation water projects implemented as part of the Quantification Settlement Agreement remain in effect, the conserved water created as part of those projects shall be credited against the obligations of the agricultural water supplier pursuant to this part.

## **Chapter 2 Definitions**

### **SECTION 10608.12**

10608.12. Unless the context otherwise requires, the following definitions govern the construction of this part:

- (a) "Agricultural water supplier" means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. "Agricultural water supplier" includes a supplier or contractor for water, regardless of the basis of right, that distributes or sells water for ultimate resale to customers. "Agricultural water supplier" does not include the department.
- (b) "Base daily per capita water use" means any of the following:
  - (1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

- (2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.
- (3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.
- (c) "Baseline commercial, industrial, and institutional water use" means an urban retail water supplier's base daily per capita water use for commercial, industrial, and institutional users.
- (d) "Commercial water user" means a water user that provides or distributes a product or service.
- (e) "Compliance daily per capita water use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.
- (f) "Disadvantaged community" means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.
- (g) "Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:
  - (1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.
  - (2) The net volume of water that the urban retail water supplier places into long-term storage.
  - (3) The volume of water the urban retail water supplier conveys for use by another urban water supplier.
  - (4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.
- (h) "Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.
- (i) "Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.

- (j) "Interim urban water use target" means the midpoint between the urban retail water supplier's base daily per capita water use and the urban retail water supplier's urban water use target for 2020.
- (k) "Locally cost effective" means that the present value of the local benefits of implementing an agricultural efficiency water management practice is greater than or equal to the present value of the local cost of implementing that measure.
- (l) "Process water" means water used for producing a product or product content or water used for research and development, including, but not limited to, continuous manufacturing processes, water used for testing and maintaining equipment used in producing a product or product content, and water used in combined heat and power facilities used in producing a product or product content. Process water does not mean incidental water uses not related to the production of a product or product content, including, but not limited to, water used for restrooms, landscaping, air conditioning, heating, kitchens, and laundry.
- (m) "Recycled water" means recycled water, as defined in subdivision (n) of Section 13050, that is used to offset potable demand, including recycled water supplied for direct use and indirect potable reuse, that meets the following requirements, where applicable:
  - (1) For groundwater recharge, including recharge through spreading basins, water supplies that are all of the following:
    - (A) Metered.
    - (B) Developed through planned investment by the urban water supplier or a wastewater treatment agency.
    - (C) Treated to a minimum tertiary level.
    - (D) Delivered within the service area of an urban retail water supplier or its urban wholesale water supplier that helps an urban retail water supplier meet its urban water use target.
  - (2) For reservoir augmentation, water supplies that meet the criteria of paragraph (1) and are conveyed through a distribution system constructed specifically for recycled water.
- (n) "Regional water resources management" means sources of supply resulting from watershed-based planning for sustainable local water reliability or any of the following alternative sources of water:
  - (1) The capture and reuse of stormwater or rainwater.
  - (2) The use of recycled water.
  - (3) The desalination of brackish groundwater.

- (4) The conjunctive use of surface water and groundwater in a manner that is consistent with the safe yield of the groundwater basin.
- (o) "Reporting period" means the years for which an urban retail water supplier reports compliance with the urban water use targets.
- (p) "Urban retail water supplier" means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.
- (q) "Urban water use target" means the urban retail water supplier's targeted future daily per capita water use.
- (r) "Urban wholesale water supplier," means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.

## **Chapter 3 Urban Retail Water Suppliers**

### SECTION 10608.16-10608.44

10608.16.(a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.

- (b) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.

10608.20.(a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

- (2) It is the intent of the Legislature that the urban water use targets described in paragraph (1) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

- (b) An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

- (1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

- (2) The per capita daily water use that is estimated using the sum of the following performance standards:

- (A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.
  - (B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.
  - (C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.
- (3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.
- (4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:
- (A) Consider climatic differences within the state.
  - (B) Consider population density differences within the state.
  - (C) Provide flexibility to communities and regions in meeting the targets.
  - (D) Consider different levels of per capita water use according to plant water needs in different regions.
  - (E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.
  - (F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.
- (c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method

described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).

- (d) The department shall update the method described in paragraph (4) of subdivision (b) and report to the Legislature by December 31, 2014. An urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may adopt a new urban daily per capita water use target pursuant to this updated method.
- (e) An urban retail water supplier shall include in its urban water management plan due in 2010 pursuant to Part 2.6 (commencing with Section 10610) the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.
- (f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.
- (g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).
- (h) (1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:
  - (A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.
  - (B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.
- (2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its Internet Web site, and make written copies available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.
- (i) (1) The department shall adopt regulations for implementation of the provisions relating to process water in accordance with subdivision (l) of Section 10608.12, subdivision (e) of Section 10608.24, and subdivision (d) of Section 10608.26.
- (2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the

Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

- (j) (1) An urban retail water supplier is granted an extension to July 1, 2011, for adoption of an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) due in 2010 to allow the use of technical methodologies developed by the department pursuant to paragraph (4) of subdivision (b) and subdivision (h). An urban retail water supplier that adopts an urban water management plan due in 2010 that does not use the methodologies developed by the department pursuant to subdivision (h) shall amend the plan by July 1, 2011, to comply with this part.
- (2) An urban wholesale water supplier whose urban water management plan prepared pursuant to Part 2.6 (commencing with Section 10610) was due and not submitted in 2010 is granted an extension to July 1, 2011, to permit coordination between an urban wholesale water supplier and urban retail water suppliers.

10608.22. Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph(3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

10608.24.(a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.

(b) Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

(c) An urban retail water supplier's compliance daily per capita water use shall be the measure of progress toward achievement of its urban water use target.

(d) (1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.

(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in

paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

- (e) When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.
- (f) (1) An urban retail water supplier that includes agricultural water use in an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) may include the agricultural water use in determining gross water use. An urban retail water supplier that includes agricultural water use in determining gross water use and develops its urban water use target pursuant to paragraph (2) of subdivision (b) of Section 10608.20 shall use a water efficient standard for agricultural irrigation of 100 percent of reference evapotranspiration multiplied by the crop coefficient for irrigated acres.  
  
(2) An urban retail water supplier, that is also an agricultural water supplier, is not subject to the requirements of Chapter 4 (commencing with Section 10608.48), if the agricultural water use is incorporated into its urban water use target pursuant to paragraph (1).

10608.26.(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

- (1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.
  - (2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.
  - (3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.
- (b) In complying with this part, an urban retail water supplier may meet its urban water use target through efficiency improvements in any combination among its customer sectors. An urban retail water supplier shall avoid placing a disproportionate burden on any customer sector.
- (c) For an urban retail water supplier that supplies water to a United States Department of Defense military installation, the urban retail water supplier's implementation plan for complying with this part shall consider the conservation of that military installation under federal Executive Order 13514.
- (d) (1) Any ordinance or resolution adopted by an urban retail water supplier after the effective date of this section shall not require existing customers as of the effective date of this section, to undertake changes in product formulation, operations, or equipment that would reduce process water use, but may provide technical assistance and financial incentives to those customers to implement efficiency measures for process water. This section shall not limit

an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

- (2) This part shall not be construed or enforced so as to interfere with the requirements of Chapter 4 (commencing with Section 113980) to Chapter 13 (commencing with Section 114380), inclusive, of Part 7 of Division 104 of the Health and Safety Code, or any requirement or standard for the protection of public health, public safety, or worker safety established by federal, state, or local government or recommended by recognized standard setting organizations or trade associations.

10608.28.(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

- (1) Through an urban wholesale water supplier.
  - (2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).
  - (3) Through a regional water management group as defined in Section 10537.
  - (4) By an integrated regional water management funding area.
  - (5) By hydrologic region.
  - (6) Through other appropriate geographic scales for which computation methods have been developed by the department.
- (b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

10608.32. All costs incurred pursuant to this part by a water utility regulated by the Public Utilities Commission may be recoverable in rates subject to review and approval by the Public Utilities Commission, and may be recorded in a memorandum account and reviewed for reasonableness by the Public Utilities Commission.

10608.36. Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

10608.40. Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans

submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

10608.42.(a) The department shall review the 2015 urban water management plans and report to the Legislature by July 1, 2017, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets to achieve the 20-percent reduction and to reflect updated efficiency information and technology changes.

(b) A report to be submitted pursuant to subdivision (a) shall be submitted in compliance with Section 9795 of the Government Code.

10608.43. The department, in conjunction with the California Urban Water Conservation Council, by April 1, 2010, shall convene a representative task force consisting of academic experts, urban retail water suppliers, environmental organizations, commercial water users, industrial water users, and institutional water users to develop alternative best management practices for commercial, industrial, and institutional users and an assessment of the potential statewide water use efficiency improvement in the commercial, industrial, and institutional sectors that would result from implementation of these best management practices. The taskforce, in conjunction with the department, shall submit a report to the Legislature by April 1, 2012, that shall include a review of multiple sectors within commercial, industrial, and institutional users and that shall recommend water use efficiency standards for commercial, industrial, and institutional users among various sectors of water use. The report shall include, but not be limited to, the following:

(a) Appropriate metrics for evaluating commercial, industrial, and institutional water use.

(b) Evaluation of water demands for manufacturing processes, goods, and cooling.

(c) Evaluation of public infrastructure necessary for delivery of recycled water to the commercial, industrial, and institutional sectors.

(d) Evaluation of institutional and economic barriers to increased recycled water use within the commercial, industrial, and institutional sectors.

(e) Identification of technical feasibility and cost of the best management practices to achieve more efficient water use statewide in the commercial, industrial, and institutional sectors that is consistent with the public interest and reflects past investments in water use efficiency.

10608.44. Each state agency shall reduce water use at facilities it operates to support urban retail water suppliers in meeting the target identified in Section 10608.16.

## Chapter 4 Agricultural Water Suppliers

### SECTION 10608.48

10608.48.(a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c).

(b) Agricultural water suppliers shall implement all of the following critical efficient management practices:

(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).

(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.

(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:

(1) Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage.

(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.

(3) Facilitate the financing of capital improvements for on-farm irrigation systems.

(4) Implement an incentive pricing structure that promotes one or more of the following goals:

(A) More efficient water use at the farm level.

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.

(5) Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.

- (6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.
  - (7) Construct and operate supplier spill and tailwater recovery systems.
  - (8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.
  - (9) Automate canal control structures.
  - (10) Facilitate or promote customer pump testing and evaluation.
  - (11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.
  - (12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:
    - (A) On-farm irrigation and drainage system evaluations.
    - (B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.
    - (C) Surface water, groundwater, and drainage water quantity and quality data.
    - (D) Agricultural water management educational programs and materials for farmers, staff, and the public.
  - (13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.
  - (14) Evaluate and improve the efficiencies of the supplier's pumps.
- (d) Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) a report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.
  - (e) The data shall be reported using a standardized form developed pursuant to Section 10608.52.
  - (f) An agricultural water supplier may meet the requirements of subdivisions (d) and (e) by submitting to the department a water conservation plan submitted to the United States Bureau of Reclamation that meets the requirements described in Section 10828.

- (g) On or before December 31, 2013, December 31, 2016, and December 31, 2021, the department, in consultation with the board, shall submit to the Legislature a report on the agricultural efficient water management practices that have been implemented and are planned to be implemented and an assessment of the manner in which the implementation of those efficient water management practices has affected and will affect agricultural operations, including estimated water use efficiency improvements, if any.
- (h) The department may update the efficient water management practices required pursuant to subdivision (c), in consultation with the Agricultural Water Management Council, the United States Bureau of Reclamation, and the board. All efficient water management practices for agricultural water use pursuant to this chapter shall be adopted or revised by the department only after the department conducts public hearings to allow participation of the diverse geographical areas and interests of the state.
- (i)
  - (1) The department shall adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirement in paragraph (1) of subdivision (b).
  - (2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

## **Chapter 5 Sustainable Water Management**

### Section 10608.50

- 10608.50.(a) The department, in consultation with the board, shall promote implementation of regional water resources management practices through increased incentives and removal of barriers consistent with state and federal law. Potential changes may include, but are not limited to, all of the following:
- (1) Revisions to the requirements for urban and agricultural water management plans.
  - (2) Revisions to the requirements for integrated regional water management plans.
  - (3) Revisions to the eligibility for state water management grants and loans.

- (4) Revisions to state or local permitting requirements that increase water supply opportunities, but do not weaken water quality protection under state and federal law.
  - (5) Increased funding for research, feasibility studies, and project construction.
  - (6) Expanding technical and educational support for local land use and water management agencies.
- (b) No later than January 1, 2011, and updated as part of the California Water Plan, the department, in consultation with the board, and with public input, shall propose new statewide targets, or review and update existing statewide targets, for regional water resources management practices, including, but not limited to, recycled water, brackish groundwater desalination, and infiltration and direct use of urban stormwater runoff.

## **Chapter 6 Standardized Data Collection**

### SECTION 10608.52

- 10608.52.(a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.
- (b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24 and an agricultural water supplier's compliance with implementation of efficient water management practices pursuant to subdivision (a) of Section 10608.48. The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

## **Chapter 7 Funding Provisions**

### Section 10608.56-10608.60

- 10608.56.(a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.
- (b) On and after July 1, 2013, an agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

- (c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.
  - (d) Notwithstanding subdivision (b), the department shall determine that an agricultural water supplier is eligible for a water grant or loan even though the supplier is not implementing all of the efficient water management practices described in Section 10608.48, if the agricultural water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the efficient water management practices. The supplier may request grant or loan funds to implement the efficient water management practices to the extent the request is consistent with the eligibility requirements applicable to the water funds.
  - (e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.
  - (f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 10800), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).
- 10608.60.(a) It is the intent of the Legislature that funds made available by Section 75026 of the Public Resources Code should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for grants to implement this part. In the allocation of funding, it is the intent of the Legislature that the department give consideration to disadvantaged communities to assist in implementing the requirements of this part.
- (b) It is the intent of the Legislature that funds made available by Section 75041 of the Public Resources Code, should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for direct expenditures to implement this part.

## **Chapter 8 Quantifying Agricultural Water Use Efficiency**

### SECTION 10608.64

10608.64. The department, in consultation with the Agricultural Water Management Council, academic experts, and other stakeholders, shall develop a methodology for quantifying the efficiency of agricultural water use. Alternatives to be assessed shall include, but not be limited to, determination of efficiency levels based on crop type or irrigation system distribution uniformity. On or before December 31, 2011, the department shall report to the Legislature on a proposed methodology and a plan for implementation. The plan shall include the estimated implementation costs and the types of data needed to support the methodology. Nothing in this section authorizes the department to implement a methodology established pursuant to this section.

# **Appendix C**

## **Adoption Resolution and Related Documentation**

**RESOLUTION NO. 16-13**

**RESOLUTION OF THE BOARD OF DIRECTORS OF THE  
RAINBOW MUNICIPAL WATER DISTRICT  
ADOPTING URBAN WATER MANAGEMENT PLAN**

**WHEREAS** the Urban Water Management Planning Act (Water Code section 10620 – 10644) requires every urban water supplier as defined in the act to prepare and adopt an urban water management plan and revise this plan at least once every five (5) years (Water Code 10621); and

**WHEREAS** Rainbow Municipal Water District is an urban water supplier within the meaning of the act; and

**WHEREAS** the District has prepared its 2015 Urban Water Management Plan, made the plan available for public inspection, and held a public hearing thereon following publication within the jurisdiction of the District of a notice of the time and place of the hearing pursuant to section 6066 of the government Code; and

**WHEREAS** it is in the interest of the District to adopt a revised water management plan;

**NOW THEREFORE BE IT RESOLVED DETERMINED AND ORDERED** by the Board of Directors of the Rainbow Municipal Water District as follows:

1. That the URBAN WATER MANAGEMENT PLAN FOR RAINBOW MUNICIPAL WATER DISTRICT, a copy of which is on file with the District be approved and adopted as the plan required by the Urban Water Management Planning Act.
2. That the District shall implement it's updated plan.
3. That the Secretary of the District is authorized and directed to file with the Department of Water Resources of the State of California a copy of the District's updated plan by July 1, 2016.

**PASSED AND ADOPTED** at an adjourned regular meeting of the Board of Directors of the Rainbow Municipal Water District held on June 28, 2016 by the following vote, to wit:

**AYES:** Directors Bigley, Brazier, Sanford, and Walker  
**NOES:** None  
**ABSENT:** Director Stewart  
**ABSTAIN:** None

  
Dennis Sanford, Board President

ATTEST:

  
Dawn Washburn, Board Secretary

SECRETARY'S CERTIFICATE

I, Dawn Washburn, Secretary of the Board of Directors of the Rainbow Municipal Water District, County of San Diego, California, hereby certify as follows:

The attached is a full, true and correct copy of a resolution adopted at a meeting of the Board of Directors of the District duly held at the regular meeting place thereof on June 28, 2016, by the following vote:

AYES: Directors Bigley, Brazier, Sanford, and Walker  
NOES: None  
ABSTAIN: None  
ABSENT: Director Stewart

An agenda of the meeting was posted at least 72 hours before the meeting at 3707 Old Highway 395, Fallbrook, California, a location freely accessible to members of the public, and a brief description of the resolution appeared on the agenda.

The resolution has not been amended, modified or rescinded since the date of its adoption, and the same is now in full force and effect.

Dated: June 29, 2016



Secretary of the Board of Directors of the  
Rainbow Municipal Water District

RAINBOW MUNICIPAL WATER DISTRICT  
NOTICE OF PUBLIC HEARING  
Tuesday, May 24, 2016

The Board of Directors of Rainbow Municipal Water District will hold a Public Hearing on Tuesday, May 24, 2016, at 1:00 p.m. at the office of the District, 3707 Old Highway 395, Fallbrook, California 92028 for the purpose of considering the adoption and implementation of RMWD's 2015 Urban Water Management Plan, as required by the California Water Code.

Copies of the plan shall be available for public review at the office of the District during normal business hours or on the website at [www.rainbowmwd.com](http://www.rainbowmwd.com).

Any person may present oral or written comments in connection with the proposed action at the Public Hearing. Written comments may also be filed with the Secretary of the Board at 3707 Old Highway 395, Fallbrook, CA 92028. All comments must be received before the close of the Public Hearing.

/s/Dawn Washburn  
Secretary of the Board  
Rainbow Municipal Water District

THE DAILY TRANSCRIPT

This space for filing stamp only

2652 4TH AVE 2ND FL, SAN DIEGO, CA 92103  
Telephone (619) 232-3486 / Fax (619) 270-2503

DELIA A. RUBIO  
RAINBOW MUNICIPAL WATER DISTRICT  
3707 OLD HIGHWAY 395  
FALLBROOK, CA - 92028

SD#: 2878235

RAINBOW MUNICIPAL WATER DISTRICT

NOTICE OF PUBLIC HEARING

Tuesday, May 24, 2016

PROOF OF PUBLICATION

(2015.5 C.C.P.)

State of California )  
County of SAN DIEGO ) ss

Notice Type: HRG - NOTICE OF HEARING

Ad Description:

NOTICE OF PUBLIC HEARING Tuesday, May 24, 2016

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Any person may present oral or written comments in connection with the proposed action at the Public Hearing. Written comments may also be filed with the Secretary of the Board at 3707 Old Highway 395, Fallbrook, CA 92028. All comments must be received before the close of the Public Hearing.

/s/ Dawn Washburn, Secretary of the Board Rainbow Municipal Water District  
5/10, 5/17/16

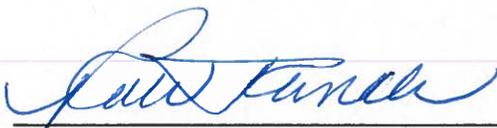
SD-2878235#

I am a citizen of the United States and a resident of the State of California; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the principal clerk of the printer and publisher of THE DAILY TRANSCRIPT, a newspaper published in the English language in the city of SAN DIEGO, and adjudged a newspaper of general circulation as defined by the laws of the State of California by the Superior Court of the County of SAN DIEGO, State of California, under date of 05/13/2003, Case No. GIC808715. That the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

05/10/2016, 05/17/2016

Executed on: 05/17/2016  
At Los Angeles, California

I certify (or declare) under penalty of perjury that the foregoing is true and correct.



Signature



# **Appendix D**

## **AWWA Water Audit Worksheet**



# AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0  
American Water Works Association.  
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? Click to access definition  
+ Click to add a comment

**Water Audit Report for:** Rainbow Municipal Water District  
**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 (n/a or 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**

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

**WATER SUPPLIED**

----- Enter grading in column 'E' and 'J' ----->

Volume from own sources:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="n/a"/>	<input type="text" value=""/>	acre-ft/yr
Water imported:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="10"/>	<input type="text" value="17,867.800"/>	acre-ft/yr
Water exported:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="n/a"/>	<input type="text" value=""/>	acre-ft/yr

Pcnt:	<input type="text" value=""/>	Value:	<input type="text" value=""/>	acre-ft/yr
<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="9"/>	<input type="text" value="0.50%"/>	<input type="text" value=""/>
<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>

**WATER SUPPLIED:** 17,778.905 acre-ft/yr

Enter negative % or value for under-registration  
Enter positive % or value for over-registration

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="7"/>	<input type="text" value="16,402.810"/>	acre-ft/yr
Billed unmetered:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value=""/>	<input type="text" value=""/>	acre-ft/yr
Unbilled metered:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="4"/>	<input type="text" value="1.000"/>	acre-ft/yr
Unbilled unmetered:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value=""/>	<input type="text" value="222.236"/>	acre-ft/yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** 16,626.046 acre-ft/yr

Click here:   
for help using option buttons below

Pcnt:	<input type="text" value="1.25%"/>	Value:	<input type="text" value=""/>	acre-ft/yr
-------	------------------------------------	--------	-------------------------------	------------

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

Pcnt:	<input type="text" value="0.25%"/>	Value:	<input type="text" value=""/>	acre-ft/yr
-------	------------------------------------	--------	-------------------------------	------------

<input type="text" value="5.00%"/>	<input type="text" value=""/>	acre-ft/yr
<input type="text" value="0.25%"/>	<input type="text" value=""/>	acre-ft/yr

**WATER LOSSES (Water Supplied - Authorized Consumption)**

1,152.859 acre-ft/yr

**Apparent Losses**

Unauthorized consumption:    acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="6"/>	<input type="text" value="863.358"/>	acre-ft/yr
Systematic data handling errors:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value=""/>	<input type="text" value="41.007"/>	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

**Apparent Losses:** 948.813 acre-ft/yr

**Real Losses (Current Annual Real Losses or CARL)**

Real Losses = Water Losses - Apparent Losses:  204.046 acre-ft/yr

**WATER LOSSES:** 1,152.859 acre-ft/yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  1,376.095 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="7"/>	<input type="text" value="315.0"/>	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="9"/>	<input type="text" value="7,839"/>	
Service connection density:	<input type="button" value="?"/>	<input type="text" value=""/>	<input type="text" value="25"/>	<input type="text" value=""/>	conn./mile main

Are customer meters typically located at the curbstop or property line?

Average length of customer service line:   (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:     psi

**COST DATA**

Total annual cost of operating water system:	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="9"/>	<input type="text" value="\$38,367,342"/>	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="10"/>	<input type="text" value="\$3.41"/>	\$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/>	<input type="button" value="?"/>	<input type="text" value="10"/>	<input type="text" value="\$1,450.00"/>	\$/acre-ft <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

**WATER AUDIT DATA VALIDITY SCORE:**

\*\*\* YOUR SCORE IS: 81 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: Unbilled metered
- 2: Billed metered
- 3: Customer metering inaccuracies



## AWWA Free Water Audit Software: System Attributes and Performance Indicators

WAS v5.0

American Water Works Association.  
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Water Audit Report for: Rainbow Municipal Water District

Reporting Year: 2015 1/2015 - 12/2015

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 81 out of 100 \*\*\*

### System Attributes:

	Apparent Losses:	948.813	acre-ft/yr
+	Real Losses:	204.046	acre-ft/yr
=	<b>Water Losses:</b>	<b>1,152.859</b>	acre-ft/yr

? Unavoidable Annual Real Losses (UARL): 564.55 acre-ft/yr

Annual cost of Apparent Losses: \$1,409,363

Annual cost of Real Losses: \$303,090 Valued at **Customer Retail Unit Cost**  
Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: { Non-revenue water as percent by volume of Water Supplied: 7.7%  
Non-revenue water as percent by cost of operating system: 5.3% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 108.06 gallons/connection/day  
Real Losses per service connection per day: N/A gallons/connection/day  
Real Losses per length of main per day\*: 578.29 gallons/mile/day  
Real Losses per service connection per day per psi pressure: N/A gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 204.05 acre-feet/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 0.36

\* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline



# AWWA Free Water Audit Software: Water Balance

WAS v5.0

American Water Works Association.

Water Audit Report for:	Rainbow Municipal Water District	
Reporting Year:	2015	1/2015 - 12/2015
Data Validity Score:	81	

		Water Exported <i>0.000</i>	Billed Water Exported				Revenue Water <b>0.000</b>
Own Sources (Adjusted for known errors)	0.000	Water Supplied <b>17,778.905</b>	Authorized Consumption <b>16,626.046</b>	Billed Authorized Consumption <b>16,402.810</b>	Billed Metered Consumption (water exported is removed) <b>16,402.810</b>		Revenue Water <b>16,402.810</b>
				Unbilled Authorized Consumption <b>223.236</b>	Billed Unmetered Consumption <b>0.000</b>		Non-Revenue Water (NRW)
Water Imported	17,778.905	Water Losses <b>1,152.859</b>	Apparent Losses <b>948.813</b>	Unbilled Metered Consumption <b>1.000</b>		<b>1,376.095</b>	
				Unbilled Unmetered Consumption <b>222.236</b>			
				Unauthorized Consumption <b>44.447</b>			
				Customer Metering Inaccuracies <b>863.358</b>			
				Systematic Data Handling Errors <b>41.007</b>			
				Leakage on Transmission and/or Distribution Mains <b>Not broken down</b>			
				Leakage and Overflows at Utility's Storage Tanks <b>Not broken down</b>			
				Leakage on Service Connections <b>Not broken down</b>			
				Real Losses <b>204.046</b>			



# AWWA Free Water Audit Software: Dashboard

WAS v5.0

American Water Works Association.  
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The graphic below is a visual representation of the Water Balance with bar heights proportional to the volume of the audit components

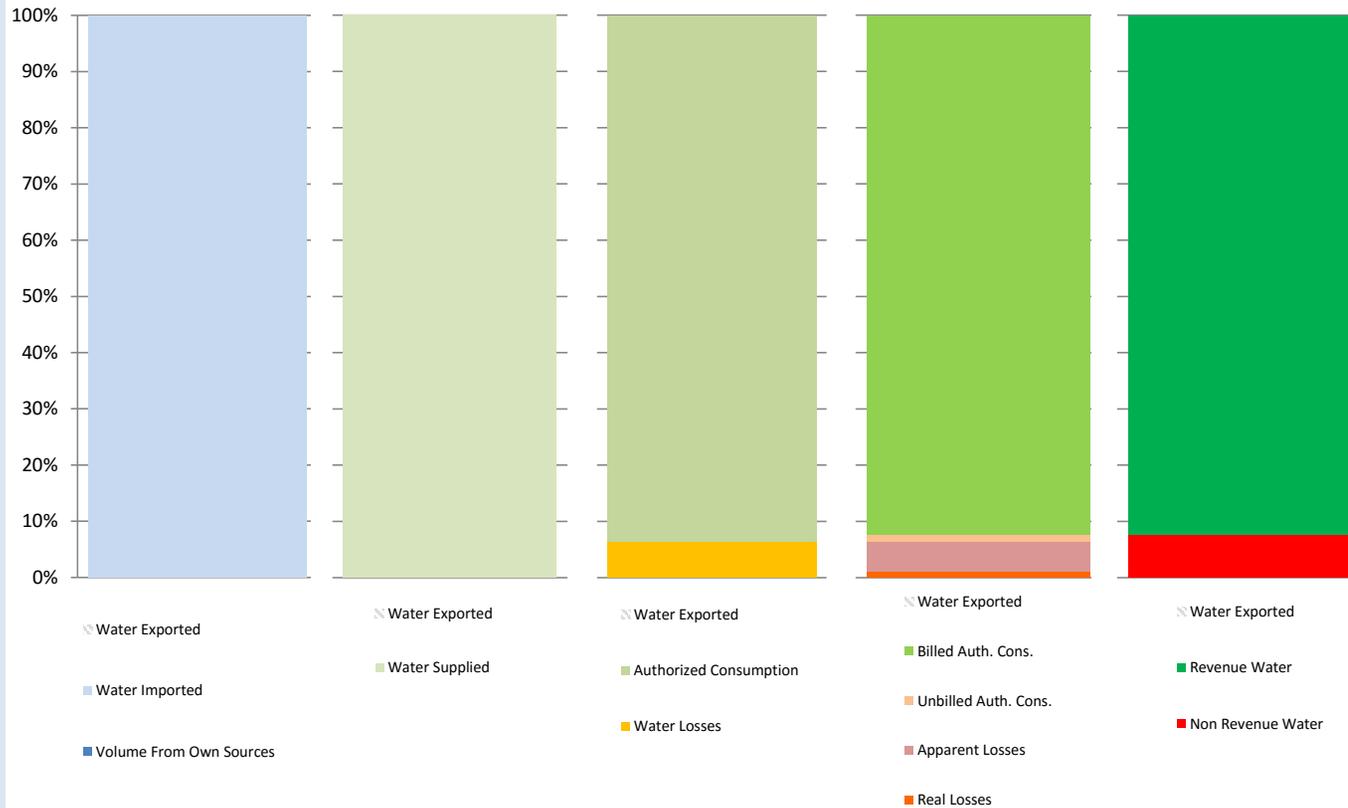
Water Audit Report for: **Rainbow Municipal Water District**

Reporting Year: **2015**      **1/2015 - 12/2015**

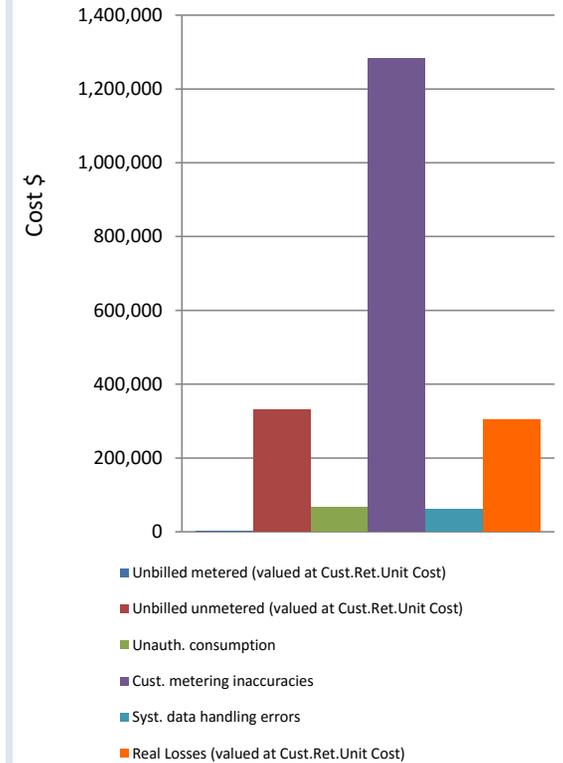
Data Validity Score: **81**

Show me the VOLUME of Non-Revenue Water

Show me the COST of Non-Revenue Water



Total Cost of NRW = \$2,044,047



AWWA Free Water Audit Software: Grading Matrix

WAS 5.0

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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
<b>WATER SUPPLIED</b>											
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 or electronic calibration conducted.	25% - 50% of treated water production sources are metered; other sources estimated. No regular meter accuracy testing or electronic calibration conducted.	Conditions between 2 and 4	50% - 75% of treated water production sources are metered, other sources estimated. Occasional meter accuracy testing or electronic calibration conducted.	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 of related instrumentation is 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 of related instrumentation is 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 of related instrumentation is conducted semi-annually, with less than 10% found outside of +/- 3% accuracy. Procedures are reviewed by a third party knowledgeable in the M36 methodology.
Improvements to attain higher data grading for "Volume from own Sources" component:		<u>to qualify for 2:</u> Organize and launch efforts to collect data for determining volume from own sources	<u>to qualify for 4:</u> Locate all water production sources on maps and in the field, launch meter accuracy testing for existing meters, begin to install meters on unmetered water production sources and replace any obsolete/defective meters.		<u>to qualify for 6:</u> Formalize annual meter accuracy testing for all source meters; specify the frequency of testing. Complete installation of meters on unmetered water production sources and complete replacement of all obsolete/defective meters.		<u>to qualify for 8:</u> Conduct annual meter accuracy testing and calibration of related instrumentation on all meter installations on a regular basis. 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.		<u>to qualify for 10:</u> Maintain annual meter accuracy testing and calibration of related instrumentation for all meter installations. Repair or replace meters outside of +/- 3% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to further improve meter accuracy.		<u>to maintain 10:</u> Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/plot improving metering technology.
Volume from own sources master meter and supply error adjustment:	Select n/a only if the water utility fails to have meters on its sources of supply	Inventory information on meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined	No automatic datalogging of production volumes; daily readings are scribed on paper records without any accountability controls. Flows are not balanced across the water distribution system; tank/storage elevation changes are not employed in calculating the "Volume from own sources" component and archived flow 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 on at least a monthly basis with necessary corrections implemented. "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 is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and/or error is confirmed by meter accuracy testing. Tank/storage facility elevation changes are automatically used in calculating a balanced "Volume from own sources" component, and data gaps in the archived data are corrected on at least a weekly basis.	Conditions between 6 and 8	Continuous production meter data is logged automatically & reviewed each business day. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and/or results of meter accuracy testing. Tank/storage facility elevation changes are automatically used in "Volume from own sources" tabulations and data gaps in the archived data are corrected on a daily basis.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically balances flows from all sources and storages; results are reviewed each business day. Tight accountability controls ensure that all data gaps that occur in the archived flow data are quickly detected and corrected. Regular calibrations between SCADA and sources meters ensures minimal data transfer error.
Improvements to attain higher data grading for "Master meter and supply error adjustment" component:		<u>to qualify for 2:</u> Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature.	<u>to qualify for 4:</u> Install automatic datalogging equipment on production meters. Complete installation of level instrumentation at all tanks/storage facilities and include tank level data in automatic calculation routine in a computerized system. Construct a computerized listing or spreadsheet to archive input volumes, tank/storage volume changes and import/export flows in order to determine the composite "Water Supplied" volume for the distribution system. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps.		<u>to qualify for 6:</u> Refine computerized data collection and archive to include hourly production meter data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Use daily net storage change to balance flows in calculating "Water Supplied" volume. Necessary corrections to data errors are implemented on a weekly basis.		<u>to qualify for 8:</u> Ensure that all flow data is collected and archived on at least an hourly basis. All data is reviewed and detected errors corrected each business day. Tank/storage levels variations are employed in calculating balanced "Water Supplied" component. Adjust production meter data for gross error and inaccuracy confirmed by testing.		<u>to qualify for 10:</u> 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. Data is reviewed and corrected each business day.		<u>to maintain 10:</u> 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. Stay abreast of new and more accurate water level instruments to better record tank/storage levels and archive the variations in storage volume. Keep current with SCADA and data management systems to ensure that archived data is well-managed and error free.
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 conducted.	Conditions between 4 and 6	At least 75% of imported water sources are metered, meter accuracy testing and/or electronic calibration of related instrumentation is conducted annually for all meter installations. 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 electronic calibration of related instrumentation is 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 electronic calibration of related instrumentation is conducted semi-annually for all meter installations, with less than 10% of accuracy tests found outside of +/- 3% accuracy.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Water Imported Volume" component:  (Note: usually the water supplier selling the water - "the Exporter" - to the utility being audited is responsible to maintain the metering installation measuring the imported volume. The utility should coordinate carefully with the Exporter to ensure that adequate meter upkeep takes place and an accurate measure of the Water Imported volume is quantified.)		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 the 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, planning for both regular meter accuracy testing and calibration of the related instrumentation. Continue installation of meters on unmetered imported 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 and conduct calibration of related instrumentation at least annually. Repair or replace meters outside of +/- 6% accuracy.		to qualify for 10: Conduct meter accuracy testing for all meters on a semi-annual basis, along with calibration of all related instrumentation. Repair or replace meters outside of +/- 3% 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. Continue to conduct calibration of related instrumentation on a semi-annual basis. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology.
Water imported master meter and supply error adjustment:	Select n/a if the Imported water supply is unmetered, with Imported water quantities estimated on the billing invoices sent by the Exporter to the purchasing Utility.	Inventory information on imported meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined. Written agreement(s) with water Exporter(s) are missing or written in vague language concerning meter management and testing.	No automatic datalogging of imported supply volumes; daily readings are scribed on paper records without any accountability controls to confirm data accuracy and the absence of errors and data gaps in recorded volumes. Written agreement requires meter accuracy testing but is vague on the details of how and who conducts the testing.	Conditions between 2 and 4	Imported supply metered flow data is logged automatically in electronic format and reviewed at least on a monthly basis by the Exporter with necessary corrections implemented. Meter data is adjusted by the Exporter when gross data errors are detected. A coherent data trail exists for this process to protect both the selling and the purchasing Utility. Written agreement exists and clearly states requirements and roles for meter accuracy testing and data management.	Conditions between 4 and 6	Hourly imported supply metered data is logged automatically & reviewed on at least a weekly basis by the Exporter. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and to correct for error confirmed by meter accuracy testing. Any data gaps in the archived data are detected and corrected during the weekly review. A coherent data trail exists for this process to protect both the selling and the purchasing Utility.	Conditions between 6 and 8	Continuous Imported supply metered flow data is logged automatically & reviewed each business day by the Exporter. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and/or results of meter accuracy testing. Any data errors/gaps are detected and corrected on a daily basis. A data trail exists for the process to protect both the selling and the purchasing Utility.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically records data which is reviewed each business day by the Exporter. Tight accountability controls ensure that all error/data gaps that occur in the archived flow data are quickly detected and corrected. A reliable data trail exists and contract provisions for meter testing and data management are reviewed by the selling and purchasing Utility at least once every five years.
Improvements to attain higher data grading for "Water imported master meter and supply error adjustment" component:		to qualify for 2: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature. Review the written agreement between the selling and purchasing Utility.	to qualify for 4: Install automatic datalogging equipment on Imported supply meters. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps. Launch discussions with the Exporters to jointly review terms of the written agreements regarding meter accuracy testing and data management; revise the terms as necessary.		to qualify for 6: Refine computerized data collection and archive to include hourly Imported supply metered flow data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Make necessary corrections to errors/data errors on a weekly basis.		to qualify for 8: Ensure that all Imported supply metered flow data is collected and archived on at least an hourly basis. All data is reviewed and errors/data gaps are corrected each business day.		to qualify for 10: Conduct accountability checks to confirm that all Imported supply metered data is reviewed and corrected each business day by the Exporter. Results of all meter accuracy tests and data corrections should be available for sharing between the Exporter and the purchasing Utility. Establish a schedule for a regular review and updating of the contractual language in the written agreement between the selling and the purchasing Utility; at least every five years.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters; work with the Exporter to help identify meter replacement needs. Keep communication lines with Exporters open and maintain productive relations. Keep the written agreement current with clear and explicit language that meets the ongoing needs of all parties.
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 conducted.	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 electronic calibration of related instrumentation is 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 electronic calibration of related instrumentation is conducted semi-annually for all meter installations, with less than 10% of accuracy tests found outside of +/- 3% accuracy.
Improvements to attain higher data grading for "Water Exported Volume" component:  (Note: usually, if the water utility being audited sells (Exports) water to a neighboring purchasing Utility, it is the responsibility of the utility exporting the water to maintain the metering installation measuring the Exported volume. The utility exporting the water should ensure that adequate meter upkeep takes place and an accurate measure of the Water Exported volume is quantified.)		to qualify for 2: Review bulk water sales agreements with purchasing utilities; 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 exported 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 +/- 3% 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 master meter and supply error adjustment:	Select n/a only if the water utility fails to have meters on its exported supply interconnections.	Inventory information on exported meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined. Written agreement(s) with the utility purchasing the water are missing or written in vague language concerning meter management and testing.	No automatic datalogging of exported supply volumes; daily readings are scribed on paper records without any accountability controls to confirm data accuracy and the absence of errors and data gaps in recorded volumes. Written agreement requires meter accuracy testing but is vague on the details of how and who conducts the testing.	Conditions between 2 and 4	Exported metered flow data is logged automatically in electronic format and reviewed at least on a monthly basis, with necessary corrections implemented. Meter data is adjusted by the utility selling (exporting) the water when gross data errors are detected. A coherent data trail exists for this process to protect both the utility exporting the water and the purchasing Utility. Written agreement exists and clearly states requirements and roles for meter accuracy testing and data management.	Conditions between 4 and 6	Hourly exported supply metered data is logged automatically & reviewed on at least a weekly basis by the utility selling the water. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and to correct for error found by meter accuracy testing. Any data gaps in the archived data are detected and corrected during the weekly review. A coherent data trail exists for this process to protect both the selling (exporting) utility and the purchasing Utility.	Conditions between 6 and 8	Continuous exported supply metered flow data is logged automatically & reviewed each business day by the utility selling (exporting) the water. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and any error confirmed by meter accuracy testing. Any data errors/gaps are detected and corrected on a daily basis. A data trail exists for the process to protect both the selling (exporting) Utility and the purchasing Utility.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically records data which is reviewed each business day by the utility selling (exporting) the water. Tight accountability controls ensure that all error/data gaps that occur in the archived flow data are quickly detected and corrected. A reliable data trail exists and contract provisions for meter testing and data management are reviewed by the selling Utility and purchasing Utility at least once every five years.
Improvements to attain higher data grading for "Water exported master meter and supply error adjustment" component:		to qualify for 2: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature. Review the written agreement between the utility selling (exporting) the water and the purchasing Utility.	to qualify for 4: Install automatic datalogging equipment on exported supply meters. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps. Launch discussions with the purchasing utilities to jointly review terms of the written agreements regarding meter accuracy testing and data management; revise the terms as necessary.		to qualify for 6: Refine computerized data collection and archive to include hourly exported supply metered flow data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Make necessary corrections to errors/data errors on a weekly basis.		to qualify for 8: Ensure that all exported metered flow data is collected and archived on at least an hourly basis. All data is reviewed and errors/data gaps are corrected each business day.		to qualify for 10: Conduct accountability checks to confirm that all exported metered flow data is reviewed and corrected each business day by the utility selling the water. Results of all meter accuracy tests and data corrections should be available for sharing between the utility and the purchasing Utility. Establish a schedule for a regular review and updating of the contractual language in the written agreements with the purchasing utilities; at least every five years.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters; work with the purchasing utilities to help identify meter replacement needs. Keep communication lines with the purchasing utilities open and maintain productive relations. Keep the written agreement current with clear and explicit language that meets the ongoing needs of all parties.
<b>AUTHORIZED CONSUMPTION</b>											
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 billing exists for the majority of the customer population	At least 50% of customers with volume-based billing from meter reads; flat rate billing for others. Manual meter reading is conducted, with less than 50% meter read success rate, remaining accounts' consumption is 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 billing for remaining accounts. Manual meter reading is conducted with at least 50% meter read success rate; consumption for accounts with failed reads is estimated. Purchase records verify age of customer meters; only very limited meter accuracy testing is conducted. Customer meters are replaced only upon complete failure. Computerized billing records exist, but only sporadic internal auditing conducted.	Conditions between 4 and 6	At least 90% of customers with volume-based billing from meter reads; consumption for remaining accounts is estimated. Manual customer meter reading gives at least 80% customer meter reading success rate; consumption for accounts with failed reads is estimated. Good customer meter records exist, but only limited meter accuracy testing is conducted. Regular replacement is conducted for the oldest meters. Computerized billing records exist with annual auditing of summary statistics conducting by utility personnel.	Conditions between 6 and 8	At least 97% of customers exist with volume-based billing from meter reads. At least 90% customer meter reading success rate; or at least 80% read success rate with planning and budgeting for trials of Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) 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 occurs annually by utility personnel, and is verified by third party at least once every five years.	Conditions between 8 and 10	At least 99% of customers exist 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) or Advanced Metering Infrastructure (AMI) trials underway. Statistically significant customer meter testing and replacement program in place on a continuous basis. Computerized billing with routine, detailed auditing, including field investigation of representative sample of accounts undertaken annually by utility personnel. Audit is conducted by third party auditors at least once every three years.
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. Launch a program of annual auditing of global billing statistics by utility personnel.		to qualify for 8: Purchase and install meters on unmetered accounts. If customer meter reading success rate is less than 97%, assess cost-effectiveness of Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) system for portion or entire system; or otherwise achieve ongoing improvements in manual meter reading success rate to 97% or higher. Refine meter accuracy testing program. Set meter replacement goals based upon accuracy test results. Implement annual auditing of detailed billing records by utility personnel and implement third party auditing at least once every five years.		to qualify for 10: Purchase and install meters on unmetered accounts. Launch Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) system trials if manual meter reading success rate of at least 99% 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 annual detailed billing data auditing by utility personnel and conduct third party auditing at least once every three years.		to maintain 10: Continue annual internal billing data auditing, and third party auditing at least every three years. Continue customer meter accuracy testing to ensure that accurate customer meter readings are obtained and entered as the basis for volume based billing. Stay abreast of improvements in Automatic Meter Reading (AMR) and Advanced Metering Infrastructure (AMI) and information management. Plan and budget for justified upgrades in metering, meter reading and billing data management to maintain very high accuracy in customer metering and billing.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
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 intentionally unmetered accounts exist	Water utility policy does <u>not</u> require customer metering; flat or fixed fee billing is employed. No data is collected on customer consumption. The only estimates of customer population consumption available are derived from data estimation methods using average fixture count multiplied by number of connections, or similar approach.	Water utility policy does <u>not</u> require customer metering; flat or fixed fee billing is employed. Some metered accounts exist in parts of the system (pilot areas or District Metered Areas) with consumption read periodically or recorded on portable dataloggers over one, three, or seven day periods. 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 <u>does</u> require metering and volume based billing in general. However, a liberal amount of exemptions and a lack of clearly written and communicated procedures result in up to 20% of billed accounts believed to be unmetered by exemption; or the water utility is in transition to becoming fully metered, and a large number of customers remain 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 <u>does</u> require metering and volume based billing but established exemptions 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 <u>does</u> require metering and volume based billing for all customer accounts. However, less than 5% of billed accounts remain unmetered because meter installation is hindered by unusual circumstances. The goal is to minimize the number of unmetered accounts. Reliable estimates of consumption are obtained for these unmetered accounts via site specific estimation methods.	Conditions between 8 and 10	Water utility policy <u>does</u> require 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.
Improvements to attain higher data grading for "Billed Unmetered Consumption" component:		<u>to qualify for 2:</u> Conduct research and evaluate cost/benefit of a new water utility policy to require metering of the customer population; thereby greatly reducing or eliminating unmetered accounts. Conduct pilot metering project by installing water meters in small sample of customer accounts and periodically reading the meters or datalogging the water consumption over one, three, or seven day periods.	<u>to qualify for 4:</u> Implement a new water utility policy requiring customer metering. Launch or 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. Begin customer meter installation.		<u>to qualify for 6:</u> Refine policy and procedures to improve customer metering participation for all but solidly exempt accounts. Assign staff resources to review billing records to identify errant unmetered properties. Specify metering needs and funding requirements to install sufficient meters to significant reduce the number of unmetered accounts		<u>to qualify for 8:</u> Push to 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. Plan special efforts to address "hard-to-access" accounts. Implement procedures to obtain a reliable consumption estimate for the remaining few unmetered accounts awaiting meter installation.		<u>to qualify for 10:</u> Continue customer meter installation throughout the service area, with a goal to minimize unmetered accounts. Sustain the effort to investigate accounts with access difficulties, and devise means to install water meters or otherwise measure water consumption.		<u>to maintain 10:</u> Continue to refine estimation methods for unmetered consumption and explore means to establish metering, for as many billed remaining 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:		<u>to qualify for 2:</u> 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.	<u>to qualify for 4:</u> 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 the number of accounts to a minimum. Consider increasing the priority of reading meters on unbilled accounts at least annually.		<u>to qualify for 6:</u> 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. Gradually include a greater number of these metered accounts to the routes for regular meter reading.		<u>to qualify for 8:</u> 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. Gradually increase the number of unbilled metered accounts that are included in regular meter reading routes.		<u>to qualify for 10:</u> Ensure that meter management (meter accuracy testing, meter replacement) and meter reading activities for unbilled accounts 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.		<u>to maintain 10:</u> Reassess the utility's philosophy in allowing any water uses to go "unbilled". It is possible to 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 multiplied by typical flowrate, multiplied by 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: water used in periodic testing of unmetered fire connections), 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 running multiplied by typical flow, multiplied by number of events) 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 running multiplied by typical flow, multiplied by number of events) 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:		<p><u>to qualify for 5:</u> Utilize the accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of this use.</p> <p><u>to qualify for 2:</u> Establish a policy regarding what water uses should be allowed to remain as unbilled and unmetered. Consider tracking a small sample of one such use (ex: fire hydrant flushings).</p>	<p><u>to qualify for 5:</u> Utilize accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of this use.</p> <p><u>to qualify for 4:</u> Evaluate the documentation of events that have been observed. Meet with user groups (ex: for fire hydrants - fire departments, contractors to ascertain their need and/or volume requirements for water from fire hydrants).</p>		<p><u>to qualify for 5:</u> Utilize accepted default value of 1.25% of the volume of water supplied as an 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, and should focus on other components since the volume of unbilled, unmetered consumption is usually a relatively small quantity component, and other larger-quantity components should take priority.</p>	<p><u>to qualify for 6 or greater:</u> Finalize policy and begin to conduct field checks to better establish and quantify such usage. Proceed if top-down audit exists and/or a great volume of such use is suspected.</p>	<p><u>to qualify for 8:</u> Assess water utility policy and procedures for various unmetered usages. For example, ensure that a policy exists and permits are issued for use of fire hydrants by persons outside of the utility. Create written procedures for use and documentation of fire hydrants by water utility personnel. Use same approach for other types of unbilled, unmetered water usage.</p>		<p><u>to qualify for 10:</u> 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.</p>	<p><u>to maintain 10:</u> 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.</p>	
<b>APPARENT LOSSES</b>											
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 multiplied typical flowrate, multiplied by number of events).	Default value of 0.25% of volume of water supplied is employed	Coherent policies exist for some forms of unauthorized consumption (more than simply fire hydrant misuse) but others await closer evaluation. Reasonable surveillance and recordkeeping exist for occurrences that fall under the policy. Volumes quantified by inference from these records.	Conditions between 6 and 8	Clear policies and good auditable recordkeeping exist for certain events (ex: tampering with water meters, illegal bypasses of customer meters); but 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 recorded and quantified via formulae (estimated time running multiplied by typical flow) or similar methods. All records and calculations should exist in a form that can be audited by a third party.
Improvements to attain higher data grading for "Unauthorized Consumption" component:		<p><u>to qualify for 5:</u> Use accepted default of 0.25% of volume of water supplied.</p> <p><u>to qualify for 2:</u> 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)</p>	<p><u>to qualify for 5:</u> Use accepted default of 0.25% of system input volume</p> <p><u>to qualify for 4:</u> 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)</p>		<p><u>to qualify for 5:</u> Utilize accepted default value of 0.25% of volume of water supplied as an 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.</p>	<p><u>to qualify for 6 or greater:</u> Finalize policy updates to clearly identify the types of water consumption that are authorized from those usages that fall outside of this policy and are, therefore, unauthorized. Begin to conduct regular field checks. Proceed if the top-down audit already exists and/or a great volume of such use is suspected.</p>	<p><u>to qualify for 8:</u> 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 detection and documentation of various occurrences of unauthorized consumption as they are uncovered.</p>		<p><u>to qualify for 10:</u> 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.</p>	<p><u>to maintain 10:</u> Continue to refine policy and procedures to eliminate any loopholes that allow or tacitly encourage unauthorized consumption. Continue to be vigilant in detection, documentation and enforcement efforts.</p>	
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 for any size of retail meter. Metering workflow is driven chaotically 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. Customer meters are tested for accuracy only upon customer request.	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 (more than just customer requests, but less than 1% of inventory). A limited number of the oldest meters are 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. The meter 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 of varying age and accumulated volume of throughput to determine optimum replacement time for various types of meters.	Statistically significant number of meters are tested in audit year. This testing is conducted on samples of meters of varying age and accumulated volume of throughput to determine optimum replacement time for these meters.	Good records of all active customer meters exist and include as a minimum: meter number, account number/location, type, size and manufacturer. Ongoing meter replacement occurs according to a targeted and justified basis. Regular meter accuracy testing gives a reliable measure of composite inaccuracy volume for the customer meter population. New metering technology is embracing to keep overall accuracy improving. Procedures are reviewed by a third party knowledgeable in the M36 methodology.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
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.	<u>to qualify for 2:</u> Gather available meter purchase records. Conduct testing on a small number of meters believed to be the most inaccurate. Review staffing needs of the metering group and budget for necessary resources to better organize meter management.	<u>to qualify for 4:</u> 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.		<u>to qualify for 6:</u> Standardize the procedures for meter recordkeeping within an electronic information system. Accelerate meter accuracy testing and meter replacements guided by testing results.		<u>to qualify for 8:</u> 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.		<u>to qualify for 9:</u> Continue efforts to manage meter population with reliable recordkeeping. Test a statistically significant number of meters each year and analyze test results in an ongoing manner to serve as a basis for a target meter replacement strategy based upon accumulated volume throughput.	<u>to qualify for 10:</u> 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.	<u>to maintain 10:</u> Increase the number of meters tested and replaced as justified by meter accuracy test data. Continually monitor development of new metering technology and Advanced Metering Infrastructure (AMI) to grasp opportunities for greater accuracy in metering of water flow and management of customer consumption data.
Systematic Data Handling Errors:	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.	Policies and procedures for activation of new customer water billing accounts are vague and lack accountability. Billing data is maintained on paper records which are not well organized. No auditing is conducted to confirm billing data handling efficiency. An unknown number of customers escape routine billing due to lack of billing process oversight.	Policy and procedures for activation of new customer accounts and oversight of billing records exist but need refinement. Billing data is maintained on paper records or insufficiently capable electronic database. Only periodic unstructured auditing work is conducted to confirm billing data handling efficiency. The volume of unbilled water due to billing lapses is a guess.	Conditions between 2 and 4	Policy and procedures for new account activation and oversight of billing operations 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 and procedures for new account activation and oversight of billing operations is adequate and reviewed periodically. Computerized billing system is 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	New account activation and billing operations policy and procedures are reviewed at least biannually. Computerized billing system includes an array of reports to confirm billing data and system functionality. Checks are conducted routinely to flag and explain zero consumption accounts. Annual internal checks conducted with third party audit conducted at least once every five years. Accountability checks flag billing lapses. Consumption lost to billing lapses is well quantified and reducing year-by-year.	Conditions between 8 and 10	Sound written policy and procedures exist for new account activation and oversight of customer billing operations. Robust computerized billing system gives high functionality and reporting capabilities which are utilized, analyzed and the results reported each billing cycle. Assessment of policy and data handling errors are conducted internally and audited by third party at least once every three years, 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:		<u>to qualify for 2:</u> Draft written policy and procedures for activating new water billing accounts and oversight of billing operations. 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.	<u>to qualify for 4:</u> Finalize written policy and procedures for activation of new billing accounts and overall billing operations management. Implement a computerized customer billing system. Conduct initial audit of billing records as part of this process.		<u>to qualify for 6:</u> Refine new account activation and billing operations 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.		<u>to qualify for 8:</u> Formalize regular review of new account activation process and general billing practices. Enhance reporting capability of computerized billing system. Formalize regular auditing process to reveal scope of data handling error. Plan for periodic third party audit to occur at least once every five years.		<u>to qualify for 10:</u> Close policy/procedure loopholes that allow some customer accounts to go unbilled, or data handling errors to exist. Ensure that billing system reports are utilized, analyzed and reported every billing cycle. Ensure that internal and third party audits are conducted at least once every three years.		<u>to maintain 10:</u> 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.
<b>SYSTEM DATA</b>											
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 or uncertain 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 written policy and procedures exist for 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 written 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 written policy and procedures exist for permitting and commissioning new water mains. Electronic recordkeeping such as a Geographical Information System (GIS) and asset management system are used to store and manage data.	Conditions between 8 and 10	Sound written 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. Records of annual field validation should be available for review.
Improvements to attain higher data grading for "Length of Water Mains" component:		<u>to qualify for 2:</u> Assign personnel to inventory current as-built records and compare with customer billing system records and highway plans in order to verify poorly documented pipelines. Assemble policy documents regarding permitting and documentation of water main installations by the utility and building developers; identify gaps in procedures that result in poor documentation of new water main installations.	<u>to qualify for 4:</u> Complete inventory of paper records of water main installations for several years prior to audit year. Review policy and procedures for commissioning and documenting new water main installation.		<u>to qualify for 6:</u> Finalize updates/improvements to written 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.		<u>to qualify for 8:</u> Launch random field checks of limited number of locations. Convert to electronic database such as a Geographic Information System (GIS) with backup as justified. Develop written policy and procedures.		<u>to qualify for 10:</u> Link Geographic Information System (GIS) and asset management databases, conduct field verification of data. Record field verification information at least annually.		<u>to maintain 10:</u> Continue with standardization and random field validation to improve the completeness and accuracy of the system.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
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	Written account activation 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	Written new account activation and overall billing policies 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 than 3%.	Conditions between 6 and 8	Policies and procedures for new account activation and overall billing operations are written, well-structured and reviewed at least biannually. Well-managed computerized information management system exists and routine, periodic field checks and internal system audits are conducted. Counts of connections are no more than 2% in error.	Conditions between 8 and 10	Sound written policy and well managed and audited procedures ensure reliable management of service connection population. Computerized information management system, Customer Billing System, and Geographic Information System (GIS) information agree; field validation proves truth of databases. Count of connections recorded as being in error is less than 1% of the entire population.
Improvements to attain higher data grading for "Number of Active and Inactive Service Connections" component:	<b>Note: The number of Service Connections does not include fire hydrant leads/lines connecting the hydrant to the water main</b>	<b>to qualify for 2:</b> Draft new policy and procedures for new account activation and overall billing operations. Research and collect paper records of installations & abandonments for several years prior to audit year.	<b>to qualify for 4:</b> Refine policy and procedures for new account activation and overall billing operations. Research computerized recordkeeping system (Customer Information System or Customer Billing System) to improve documentation format for service connections.		<b>to qualify for 6:</b> Refine procedures to ensure consistency with new account activation and overall billing 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.		<b>to qualify for 8:</b> Formalize regular review of new account activation and overall billing operations policies and procedures. Launch random field checks of limited number of locations. Develop reports and auditing mechanisms for computerized information management system.		<b>to qualify for 10:</b> 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.		<b>to maintain 10:</b> 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 curb stop or boundary separating utility/customer responsibility, then the auditor should answer "Yes" to the question on the Reporting Worksheet asking about this. If the answer is Yes, the grading description listed under the Grading of 10(a) will be followed, with a value of zero automatically entered at a Grading of 10. See the Service Connection Diagram worksheet for a visual presentation of this distance.	Gratings 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 curb stop 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. Gratings 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 for a grading of 10: a) Customer water meters exist outside of customer buildings next to the curb stop or boundary separating utility/customer responsibility for service connection piping. If so, answer "Yes" to the question on the Reporting Worksheet asking about this condition. A value of zero and a Grading of 10 are automatically entered in the Reporting Worksheet. b) Meters exist inside customer buildings, or properties are unmetered. In either case, answer "No" to the Reporting Worksheet question on meter location, and enter a distance determined by the auditor. For a Grading of 10 this value must be a very reliable number from a Geographic Information System (GIS) and confirmed by a statistically valid number of field checks.
Improvements to attain higher data grading for "Average Length of Customer Service Line" component:		<b>to qualify for 2:</b> Research and collect paper records of service line installations. Inspect several sites in the field using pipe locators to locate curb stops. Obtain the length of this small sample of connections in this manner.	<b>to qualify for 4:</b> 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.		<b>to qualify for 6:</b> Establish coherent procedures to ensure that policy for curb stop, meter installation and documentation is followed. Gain consensus within the water utility for the establishment of a computerized information management system.		<b>to qualify for 8:</b> Implement an electronic means of recordkeeping, typically via a customer information system, customer billing system, or Geographic Information System (GIS). Standardize the process to conduct field checks of a limited number of locations.		<b>to qualify for 10:</b> Link customer information management system and Geographic Information System (GIS), standardize process for field verification of data.		<b>to maintain 10:</b> Continue with standardization and random field validation to improve knowledge of service connection configurations and customer meter locations.
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 pumping station and water storage tank 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 breach 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 breach pressure zones. Well-covered telemetry monitoring of the distribution system (not just pumping at source treatment plants or wells) 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 or similar realtime monitoring 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 monitoring 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. Calculations are reported on an annual basis as a minimum.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Average Operating Pressure" component:		<p><u>to qualify for 2:</u> 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</p>	<p><u>to qualify for 4:</u> 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.</p>		<p><u>to qualify for 6:</u> 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.</p>		<p><u>to qualify for 8:</u> Install a Supervisory Control and Data Acquisition (SCADA) System, or similar realtime monitoring 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.</p>		<p><u>to qualify for 10:</u> Annually, obtain a system-wide average pressure value from the 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.</p>		<p><u>to maintain 10:</u> 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.</p>

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
<b>COST DATA</b>											
Total annual cost of operating water system:		Incomplete paper records and lack of financial accounting documentation on many operating functions makes 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. However, gaps in data are known to exist, periodic internal reviews are conducted but not a structured financial 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, but 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 at least once every three years 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 annually also by third-party CPA.
Improvements to attain higher data grading for "Total Annual Cost of Operating the Water System" component:		<u>to qualify for 2:</u> Gather available records, institute new financial accounting procedures to regularly collect and audit basic cost data of most important operations functions.	<u>to qualify for 4:</u> Implement an electronic cost accounting system, structured according to accounting standards for water utilities		<u>to qualify for 6:</u> Establish process for periodic internal audit of water system operating costs; identify cost data gaps and institute procedures for tracking these outstanding costs.		<u>to qualify for 8:</u> Standardize the process to conduct routine financial audit on an annual basis. Arrange for CPA audit of financial records at least once every three years.		<u>to qualify for 10:</u> Standardize the process to conduct a third-party financial audit by a CPA on an annual basis.		<u>to maintain 10:</u> Maintain program, stay abreast of expenses subject to erratic cost changes and long-term cost trend, and budget/track costs proactively
Customer retail unit cost (applied to Apparent Losses):	Customer population unmetered, and/or only a fixed fee is charged for consumption.	Antiquated, cumbersome water rate structure is used, 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.	Conditions between 4 and 6	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, which includes residential, commercial, industrial, institutional (CII), and any other distinct customer classes within the water rate structure.	Conditions between 8 and 10	Current, effective water rate structure is in force and applied reliably in billing operations. The rate structure and calculations of composite rate - which includes residential, commercial, industrial, institutional (CII), and other distinct customer classes - are reviewed by a third party knowledgeable in the M36 methodology at least once every five years.
Improvements to attain higher data grading for "Customer Retail Unit Cost" component:		<u>to qualify for 2:</u> 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.	<u>to qualify for 4:</u> 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.		<u>to qualify for 6:</u> Evaluate volume of water used in each usage block by residential users. Multiply volumes by full rate structure.	<u>Launch effort to fully meter the customer population and charge rates based upon water volumes</u>	<u>to qualify for 8:</u> Evaluate volume of water used in each usage block by all classifications of users. Multiply volumes by full rate structure.		<u>to qualify for 10:</u> Conduct a periodic third-party audit of water used in each usage block by all classifications of users. Multiply volumes by full rate structure.		<u>to maintain 10:</u> 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 weighted calculation of unit variable production costs based on these two inputs and water imported purchase costs (if applicable). 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, treatment and water imported purchase costs (if applicable) such as liability, residuals management, wear and tear on equipment, impending expansion of supply, are included in the unit variable production cost, as applicable. The data is audited at least annually by utility personnel.	Conditions between 6 and 8	Reliable electronic, industry-standard cost accounting system in place, with all pertinent primary and secondary variable production and water imported purchase (if applicable) costs tracked. The data is audited at least annually by utility personnel, and at least once every three years by a third-party knowledgeable in the M36 methodology.	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 pertinent primary and secondary variable production and water imported purchase (if applicable) costs on an annual basis. or 2) Water supply is entirely purchased as bulk water imported, and the unit purchase cost - including all applicable marginal supply costs - serves as the variable production cost. If all applicable marginal supply costs are not included in this figure, a grade of 10 should not be selected.
Improvements to attain higher data grading for "Variable Production Cost" component:		<u>to qualify for 2:</u> Gather available records, institute new procedures to regularly collect and audit basic cost data and most important operations functions.	<u>to qualify for 4:</u> Implement an electronic cost accounting system, structured according to accounting standards for water utilities		<u>to qualify for 6:</u> Formalize process for regular internal audits of production costs. Assess whether additional costs (liability, residuals management, equipment wear, impending infrastructure expansion) should be included to calculate a more representative variable production cost.		<u>to qualify for 8:</u> Formalize the accounting process to include direct cost components (power, treatment) as well as indirect cost components (liability, residuals management, etc.) Arrange to conduct audits by a knowledgeable third-party at least once every three years.		<u>to qualify for 10:</u> Standardize the process to conduct a third-party financial audit by a CPA on an annual basis.		<u>to maintain 10:</u> Maintain program, stay abreast of expenses subject to erratic cost changes and budget/track costs proactively



## AWWA Free Water Audit Software: Determining Water Loss Standing

WAS v5.0

American Water Works Association.  
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Water Audit Report for: Rainbow Municipal Water District  
 Reporting Year: 2015 1/2015 - 12/2015  
 Data Validity Score: 81

### Water Loss Control Planning Guide

Water Audit Data Validity Level / Score					
Functional Focus Area	Level I (0-25)	Level II (26-50)	Level III (51-70)	Level IV (71-90)	Level V (91-100)
Audit Data Collection	Launch auditing and loss control team; address production metering deficiencies	Analyze business process for customer metering and billing functions and water supply operations. Identify data gaps.	Establish/revise policies and procedures for data collection	Refine data collection practices and establish as routine business process	Annual water audit is a reliable gauge of year-to-year water efficiency standing
Short-term loss control	Research information on leak detection programs. Begin flowcharting analysis of customer billing system	Conduct loss assessment investigations on a sample portion of the system: customer meter testing, leak survey, unauthorized consumption, etc.	Establish ongoing mechanisms for customer meter accuracy testing, active leakage control and infrastructure monitoring	Refine, enhance or expand ongoing programs based upon economic justification	Stay abreast of improvements in metering, meter reading, billing, leakage management and infrastructure rehabilitation
Long-term loss control		Begin to assess long-term needs requiring large expenditure: customer meter replacement, water main replacement program, new customer billing system or Automatic Meter Reading (AMR) system.	Begin to assemble economic business case for long-term needs based upon improved data becoming available through the water audit process.	Conduct detailed planning, budgeting and launch of comprehensive improvements for metering, billing or infrastructure management	Continue incremental improvements in short-term and long-term loss control interventions
Target-setting			Establish long-term apparent and real loss reduction goals (+10 year horizon)	Establish mid-range (5 year horizon) apparent and real loss reduction goals	Evaluate and refine loss control goals on a yearly basis
Benchmarking			Preliminary Comparisons - can begin to rely upon the Infrastructure Leakage Index (ILI) for performance comparisons for real losses (see below table)	Performance Benchmarking - ILI is meaningful in comparing real loss standing	Identify Best Practices/ Best in class - the ILI is very reliable as a real loss performance indicator for best in class service

*For validity scores of 50 or below, the shaded blocks should not be focus areas until better data validity is achieved.*

Once data have been entered into the Reporting Worksheet, the performance indicators are automatically calculated. How does a water utility operator know how well his or her system is performing? The AWWA Water Loss Control Committee provided the following table to assist water utilities in gauging an approximate Infrastructure Leakage Index (ILI) that is appropriate for their water system and local conditions. The lower the amount of leakage and real losses that exist in the system, then the lower the ILI value will be.

**Note:** this table offers an approximate guideline for leakage reduction target-setting. The best means of setting such targets include performing an economic assessment of various loss control methods. However, this table is useful if such an assessment is not possible.

**General Guidelines for Setting a Target ILI  
(without doing a full economic analysis of leakage control options)**

Target ILI Range	Financial Considerations	Operational Considerations	Water Resources Considerations
<b>1.0 - 3.0</b>	Water resources are costly to develop or purchase; ability to increase revenues via water rates is greatly limited because of regulation or low ratepayer affordability.	Operating with system leakage above this level would require expansion of existing infrastructure and/or additional water resources to meet the demand.	Available resources are greatly limited and are very difficult and/or environmentally unsound to develop.
<b>&gt;3.0 -5.0</b>	Water resources can be developed or purchased at reasonable expense; periodic water rate increases can be feasibly imposed and are tolerated by the customer population.	Existing water supply infrastructure capability is sufficient to meet long-term demand as long as reasonable leakage management controls are in place.	Water resources are believed to be sufficient to meet long-term needs, but demand management interventions (leakage management, water conservation) are included in the long-term planning.
<b>&gt;5.0 - 8.0</b>	Cost to purchase or obtain/treat water is low, as are rates charged to customers.	Superior reliability, capacity and integrity of the water supply infrastructure make it relatively immune to supply shortages.	Water resources are plentiful, reliable, and easily extracted.
<b>Greater than 8.0</b>	Although operational and financial considerations may allow a long-term ILI greater than 8.0, such a level of leakage is not an effective utilization of water as a resource. Setting a target level greater than 8.0 - other than as an incremental goal to a smaller long-term target - is discouraged.		
<b>Less than 1.0</b>	If the calculated Infrastructure Leakage Index (ILI) value for your system is 1.0 or less, two possibilities exist. a) you are maintaining your leakage at low levels in a class with the top worldwide performers in leakage control. b) A portion of your data may be flawed, causing your losses to be greatly understated. This is likely if you calculate a low ILI value but do not employ extensive leakage control practices in your operations. In such cases it is beneficial to validate the data by performing field measurements to confirm the accuracy of production and customer meters, or to identify any other potential sources of error in the data.		

# **Appendix E**

## **SBx7-7 Calculation Worksheets**

**SB X7-7 Table-1: Baseline Period Ranges**

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	27,198	Acre Feet
	2008 total volume of delivered recycled water	0	Acre Feet
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period <sup>1</sup>	10	Years
	Year beginning baseline period range	1999	
	Year ending baseline period range <sup>2</sup>	2008	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range <sup>3</sup>	2007	
<sup>1</sup> 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.			
<sup>2</sup> The ending year must be between December 31, 2004 and December 31, 2010.			
<sup>3</sup> The ending year must be between December 31, 2007 and December 31, 2010.			
NOTES: Potable per SDCWA			

<b>SB X7-7 Table 2: Method for Population Estimates</b>	
<b>Method Used to Determine Population</b> (may check more than one)	
<input type="checkbox"/>	<b>1. Department of Finance (DOF)</b> DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
<input type="checkbox"/>	<b>2. Persons-per-Connection Method</b>
<input type="checkbox"/>	<b>3. DWR Population Tool</b>
<input checked="" type="checkbox"/>	<b>4. Other*</b> DWR recommends pre-review
<p>* Estimates per San Diego Association of Governments (SANDAG). Data provided by SANDAG 4/5/16. Custom data sort to Rainbow service area boundary, per shape file provided by District 2015. SANDAG methodology uses census data for 2000 and 2010, at census block level.</p>	

<b>SB X7-7 Table 3: Service Area Population</b>		
<b>Year</b>		<b>Population</b>
<b>10 Year Baseline Population</b>		
Year 1	1999	16,045
Year 2	2000	16,178
Year 3	2001	17,201
Year 4	2002	17,099
Year 5	2003	17,122
Year 6	2004	17,882
Year 7	2005	17,899
Year 8	2006	18,039
Year 9	2007	18,145
Year 10	2008	18,242
<b>5 Year Baseline Population</b>		
Year 1	2003	17,122
Year 2	2005	17,882
Year 3	2006	17,899
Year 4	2007	18,039
Year 5	2008	18,145
<b>2015 Compliance Year Population</b>		
	<b>2015</b>	<b>20,279</b>
<p>NOTES: Estimates per San Diego Association of Governments (SANDAG). Data provided by SANDAG 4/5/16. Custom data sort to Rainbow service area boundary, per shape file provided by District 2015. SANDAG methodology uses census data for 2000 and 2010, at census block level.</p>		

**SB X7-7 Table 4: Annual Gross Water Use**

	Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Into Distribution System <i>Fm SB X7-7 Table(s) 4-A</i>	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water <i>Fm SB X7-7 Table 4-B</i>	Water Delivered for Ag Use	Process Water <i>Fm SB X7-7 Table(s) 4-D</i>	
<b>10 Year Baseline - Gross Water Use</b>								
Year 1	1999	25,177			0		0	25,177
Year 2	2000	29,859			0		0	29,859
Year 3	2001	27,329			0		0	27,329
Year 4	2002	31,633			0		0	31,633
Year 5	2003	28,995			0		0	28,995
Year 6	2004	33,300			0		0	33,300
Year 7	2005	25,273			0		0	25,273
Year 8	2006	30,501			0		0	30,501
Year 9	2007	33,186			0		0	33,186
Year 10	2008	27,198			0		0	27,198
<b>10 year baseline average gross water use</b>								<b>29,245</b>
<b>5 Year Baseline - Gross Water Use</b>								
Year 1	2003	28,995			0		0	28,995
Year 2	2005	33,300			0		0	33,300
Year 3	2006	25,273			0		0	25,273
Year 4	2007	30,501			0		0	30,501
Year 5	2008	33,186			0		0	33,186
<b>5 year baseline average gross water use</b>								<b>30,251</b>
<b>2015 Compliance Year - Gross Water Use</b>								
	<b>2015</b>	20,062			0		0	20,062
NOTES : The Agricultural Use deduction is optional per SBx7-7 and the DWR Methodology guidebook. By not deducting its agricultural usage, the District satisfies its agricultural water management reporting through its UWMP, and is not subject to separate agricultural water management plan requirements.								

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

Complete one table for each source.

<b>Name of Source</b>		SDCWA		
<b>This water source is:</b>				
<input type="checkbox"/>	The supplier's own water source			
<input checked="" type="checkbox"/>	A purchased or imported source			
<b>Baseline Year</b> <i>Fm SB X7-7 Table 3</i>	<b>Volume Entering Distribution System</b>	<b>Meter Error Adjustment*</b> <i>Optional (+/-)</i>	<b>Corrected Volume Entering Distribution System</b>	
<b>10 Year Baseline - Water into Distribution System</b>				
Year 1	1999	25,177		25,177
Year 2	2000	29,859		29,859
Year 3	2001	27,329		27,329
Year 4	2002	31,633		31,633
Year 5	2003	28,995		28,995
Year 6	2004	33,300		33,300
Year 7	2005	25,273		25,273
NOTES: F	2006	30,501		30,501
Year 9	2007	33,186		33,186
Year 10	2008	27,198		27,198
<b>5 Year Baseline - Water into Distribution System</b>				
Year 1	2003	28,995		28,995
Year 2	2005	33,300		33,300
Year 3	2006	25,273		25,273
Year 4	2007	30,501		30,501
Year 5	2008	33,186		33,186
<b>2015 Compliance Year - Water into Distribution System</b>				
	<b>2015</b>	20,062		20,062
<i>* Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</i>				
NOTES: Sole source of District supply.				

<b>SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)</b>				
<b>Baseline Year</b> <i>Fm SB X7-7 Table 3</i>		<b>Service Area Population</b> <i>Fm SB X7-7 Table 3</i>	<b>Annual Gross Water Use</b> <i>Fm SB X7-7 Table 4</i>	<b>Daily Per Capita Water Use (GPCD)</b>
<b>10 Year Baseline GPCD</b>				
Year 1	1999	16,045	25,177	1,401
Year 2	2000	16,178	29,859	1,648
Year 3	2001	17,201	27,329	1,418
Year 4	2002	17,099	31,633	1,652
Year 5	2003	17,122	28,995	1,512
Year 6	2004	17,882	33,300	1,662
Year 7	2005	17,899	25,273	1,261
Year 8	2006	18,039	30,501	1,509
Year 9	2007	18,145	33,186	1,633
Year 10	2008	18,242	27,198	1,331
<b>10 Year Average Baseline GPCD</b>				<b>1,503</b>
<b>5 Year Baseline GPCD</b>				
<b>Baseline Year</b> <i>Fm SB X7-7 Table 3</i>		<b>Service Area Population</b> <i>Fm SB X7-7 Table 3</i>	<b>Gross Water Use</b> <i>Fm SB X7-7 Table 4</i>	<b>Daily Per Capita Water Use</b>
Year 1	2003	17,122	28,995	1,512
Year 2	2005	17,882	33,300	1,662
Year 3	2006	17,899	25,273	1,261
Year 4	2007	18,039	30,501	1,509
Year 5	2008	18,145	33,186	1,633
<b>5 Year Average Baseline GPCD</b>				<b>1,515</b>
<b>2015 Compliance Year GPCD</b>				
<b>2015</b>		20,279	20,062	883
NOTES:				

<b>SB X7-7 Table 6: Gallons per Capita per Day</b> <i>Summary From Table SB X7-7 Table 5</i>	
10 Year Baseline GPCD	1,503
5 Year Baseline GPCD	1,515
2015 Compliance Year GPCD	883
NOTES:	

**SB X7-7 Table 7: 2020 Target Method***Select Only One*

Target Method		Supporting Documentation
<input checked="" type="checkbox"/>	Method 1	SB X7-7 Table 7A
<input type="checkbox"/>	Method 2	SB X7-7 Tables 7B, 7C, and 7D <i>Contact DWR for these tables</i>
<input type="checkbox"/>	Method 3	SB X7-7 Table 7-E
<input type="checkbox"/>	Method 4	Method 4 Calculator
NOTES:		

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10 Year Baseline GPCD	2020 Target GPCD
1503	1202
NOTES: Target = 80% of Baseline	

<b>SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target</b>			
5 Year Baseline GPCD <i>From SB X7-7 Table 5</i>	Maximum 2020 Target*	Calculated 2020 Target <i>Fm Appropriate Target Table</i>	Confirmed 2020 Target
1515	1440	1202	1202
* Maximum 2020 Target is 95% of the 5 Year Baseline GPCD			
NOTES:			

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target <i>Fm SB X7-7</i> <i>Table 7-F</i>	10 year Baseline GPCD <i>Fm SB X7-7</i> <i>Table 5</i>	2015 Interim Target GPCD
1,202	1,503	1,352
NOTES: Interim Target = 90% Baseline		

**SB X7-7 Table 9: 2015 Compliance**

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments		2015 GPCD <i>(Adjusted if applicable)</i>	Did Supplier Achieve Targeted Reduction for 2015?
		TOTAL Adjustments	Adjusted 2015 GPCD		
883	1352	0	883	883	YES
NOTES:					

## Appendix F

# Water Authority Documentation of Supply Reliability

- Section 9 of the San Diego County Water Authority's Draft Regional UWMP, April 2016. The complete UWMP is available on the Water Authority website at <http://www.sdcwa.org/uwmp>.

## Section 9

# Water Supply Reliability

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Under the Act, every UWMP must include an assessment of water supply reliability. The assessment must compare the total projected water supply and demands over the next 20 years in five-year increments under normal, single dry year, and multiple dry water years. The assessment contained in the 2015 Plan evaluates reliability through the next 25 years. In addition to the verifiable mix of resources utilized in the reliability assessment, additional planned resources by the Water Authority and its member agencies have also been identified. Additional planned projects can further reduce the region's reliance on sources of supply from Metropolitan, such as the Bay-Delta. This section presents a summary of the water demands and supplies within the Water Authority's service area, along with the reliability assessment and discussion on additional planned projects. Results from the reliability assessment demonstrate that even with very conservative assumptions regarding the availability of dry year supplies from Metropolitan, the region's existing and projected water resource mix is increasingly drought-resilient, but shortages still occur during a single dry-year by 2030, and more significant shortages during a multiple dry water year event beginning in 2028. These shortages can be mitigated through extraordinary water conservation actions and if necessary, dry-year transfers.

## 9.1 Development of Projected Water Resources Mix

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

- I. Member agency information on projected water recycling, potable reuse, groundwater, desalination, and surface water (discussed in **Section 5**)
- II. Attaining the additional regional water use efficiency targets (**Section 2**)
- III. Board approvals taken in regard to Water Authority supplies (**Sections 4 and 11**):
  - a. Agreement between IID and the Water Authority for Transfer of Conserved Water, and other related agreements (**Section 4.2**);
  - b. Agreements related to the ACC and CC Lining Projects, and other related agreements (**Section 4.3**);
  - c. Claude "Bud" Lewis Carlsbad Desalination Plant Water Purchase Agreement between the Water Authority and Poseidon Water (**Section 4.5**);
  - d. Acceptance of San Vicente Dam Raise Project (emergency and carryover storage) as complete (**Section 11.2.4**);
  - e. Approval of 2013 Regional Water Facilities Optimization and Master Plan Update (**Section 1.6.4**); and
  - f. Agreements and actions related to out-of-region groundwater banking program (**Section 11.2.4**).

## 9.2 Normal Water Year Assessment

Table 9-1 shows the normal year assessment, summarizing the total water demands within the Water Authority's service area through the year 2040 along with the supplies necessary to meet demands under normal conditions. **Section 2** contains a discussion of the normal year water demands in the Water Authority's service area. If Metropolitan, the Water Authority and member agency supplies are maintained and developed as planned, along with achievement of the additional water conservation, no shortages are anticipated within the Water Authority's service area in a normal year through 2040.

In the reliability assessment, the projected supplies from Metropolitan are considered supplemental and are calculated as the increment of supply necessary to meet demands after taking into account member agency and Water Authority supplies. Metropolitan staff provided the Water Authority with estimated demands on Metropolitan that will be used in their 2015 Plan. The estimated demands are shown to be adequate to cover the supplemental need identified in Table 9-1. The data provided by Metropolitan is included in **Appendix I**.

**Table 9-1. Normal Water Year Supply and Demand Assessment (AF/YR)<sup>1</sup>**

	2020	2025	2030	2035	2040
<b>Water Authority Supplies</b>					
IID Water Transfer	190,000	200,000	200,000	200,000	200,000
ACC and CC Lining Projects	80,200	80,200	80,200	80,200	80,200
Lewis Carlsbad Desalination Plant	50,000	50,000	50,000	50,000	50,000
<b>Sub-Total</b>	<b>320,200</b>	<b>330,200</b>	<b>330,200</b>	<b>330,200</b>	<b>330,200</b>
<b>Member Agency Supplies</b>					
Surface Water	51,580	51,480	51,380	51,280	51,180
Water Recycling	41,166	44,381	46,465	46,825	47,565
Seawater Desalination	6,000	6,000	6,000	6,000	6,000
Potable Reuse	3,300	3,300	3,300	3,300	3,300
Brackish GW Recovery	12,100	12,507	12,507	12,507	12,507
Groundwater	17,940	19,130	20,170	20,170	20,170
<b>Sub-Total</b>	<b>132,086</b>	<b>136,798</b>	<b>139,822</b>	<b>140,082</b>	<b>140,722</b>
<b>Metropolitan Water District Supplies</b>	<b>130,897</b>	<b>164,855</b>	<b>183,578</b>	<b>202,042</b>	<b>226,713</b>
<b>Total Projected Supplies</b>	<b>583,183</b>	<b>631,853</b>	<b>653,600</b>	<b>672,324</b>	<b>697,635</b>
Total Demands w/ Water Efficiency Savings	583,183	631,853	653,600	672,324	697,635

<sup>1</sup> Normal water year demands based on 1960 – 2013 hydrology.

## 9.3 Dry Water Year Assessment

In addition to a normal water year assessment, the Act requires an assessment to compare supply and demands under a single dry year and multiple dry water years over the next 20 years, in five-year increments. **Section 2** describes the derivation of the dry water year demands. Table 9-2 shows the single dry-year assessment. The dry-year demands reflect long-term water use efficiency, but do not incorporate potential savings due to extraordinary conservation occurring during droughts. This approach allows for a more comprehensive shortage analysis and drought response planning.

The projected groundwater and surface water yields shown in the table are based on 2015 dry-year supplies during the present drought beginning in 2012. The Verifiable supplies available from member agency projected recycling, potable reuse, and groundwater recovery projects are assumed to experience little, if any, reduction in a dry year. The Water Authority's existing and planned conserved supplies from the IID transfer, canal lining projects, and Carlsbad Desalination Plant are also considered "drought-resilient" supplies as discussed in **Section 4**. For this single dry-year assessment, it was assumed that Metropolitan is limited to 1.4 MAF of supplies due to dry conditions and increased reductions in deliveries from State Water Project (no Delta improvements) and/or reduction in Colorado River deliveries; and the Water Authority receives its preferential right based on Metropolitan's current method of calculating such rights.

**Table 9-2. Single Dry Water Year Supply and Demand Assessment Five Year Increments (AF/YR)**

	2020	2025	2030	2035	2040
<b>Water Authority Supplies</b>					
IID Water Transfer	190,000	200,000	200,000	200,000	200,000
ACC and CC Lining Projects	80,200	80,200	80,200	80,200	80,200
Regional Seawater Desalination	50,000	50,000	50,000	50,000	50,000
<b>Sub-Total</b>	<b>320,200</b>	<b>330,200</b>	<b>330,200</b>	<b>330,200</b>	<b>330,200</b>
<b>Member Agency Supplies</b>					
Surface Water	6,004	6,004	6,004	6,004	6,004
Water Recycling	41,166	44,381	46,465	46,825	47,565
Seawater Desalination	6,000	6,000	6,000	6,000	6,000
Potable Reuse	3,300	3,300	3,300	3,300	3,300
Brackish GW Recovery	12,100	12,507	12,507	12,507	12,507
Groundwater	15,281	15,281	15,281	15,281	15,281
<b>Sub-Total</b>	<b>83,851</b>	<b>87,473</b>	<b>89,557</b>	<b>89,917</b>	<b>90,657</b>
<b>Metropolitan Water District Supplies</b>	<b>263,340</b>	<b>264,740</b>	<b>263,340</b>	<b>260,680</b>	<b>258,720</b>
<b>Total Projected Supplies w/o Storage Takes</b>	<b>667,391</b>	<b>682,413</b>	<b>683,097</b>	<b>680,797</b>	<b>679,577</b>
Total Demands w/ Water Efficiency Savings	624,523	676,872	700,459	720,531	759,852
Potential Supply (Shortage) or Surplus	42,868	5,541	(17,362)	(39,734)	(80,275)
Utilization Carryover Supplies	0	0	17,362	39,734	40,000
<b>Total Projected Core Supplies w/ Utilization of Carryover Storage Supplies</b>	<b>667,391</b>	<b>682,413</b>	<b>700,459</b>	<b>720,531</b>	<b>719,577</b>
Remaining Potential Surplus Supply, or (Shortage) that will be handled through Management Actions	42,868	5,541	0	0	(40,275)

With a very conservative assumption regarding limited Metropolitan supplies during a single dry water year and assuming Water Authority and member agency supplies are maintained and developed as planned, along with achievement of the additional conservation target, no shortages are anticipated within the Water Authority's service area in a single dry year until 2040. These shortages would be eliminated should Metropolitan supplies approach the supply levels projected in Metropolitan's Draft 2015 UWMP Single Dry Year Supply Capability.

As discussed in **Section 11.2.4**, the Water Authority has invested in carryover storage supply capacity, which can be utilized in dry years to improve reliability. The carryover storage investment includes both surface water storage in San Vicente Reservoir and out-of-region groundwater storage in California's Central Valley, for a total of 170,000 AF of carryover storage capacity available.

As described in **Section 11.2.4**, there are a number of factors to consider when determining the utilization of carryover supplies to reduce or eliminate shortages. The storage take amount should be handled on a case-by-case basis, considering such items as, current demand trends, core supply availability, hydrologic conditions, and storage supply available for withdrawal. These factors will vary depending upon the situation. For the analysis in the 2015 Plan, it was assumed the available carryover storage would be 120,000 AF going into the dry-year period. In determining the amount to utilize, the analysis uses general guidelines, consistent with previous Water Authority planning documents, that approximately one third of the carryover supplies available in storage will be utilized in one year. Utilizing a portion of available storage supplies avoids depletion of storage reserves, thereby making water available for potential ongoing or future shortages. The supplies taken from carryover storage will be considered a Water Authority regional supply to be combined with the Water Authority's core supplies and any potential dry-year transfers.

Under the Water Authority's current Transitional Special Agricultural Water Rate (TSAWR) program requirements, customers in the TSAWR class of service receive no water from the Carryover Storage Program during Stage 2 or 3 of the Water Shortage Drought Response Plan. During shortages, TSAWR deliveries are also cut back at the same level as Metropolitan's cutback to the Water Authority. Extension of the TSAWR program was approved by the Water Authority Board in March 2014 and will be revisited by the Board again in 2020. For planning purposes only, the assessments in Tables 9-3 through 9-7 do not factor in the exclusion from the Carryover Storage Program due to the uncertainties associated with the future of the program beyond 2020. This also provides a more conservative planning analysis.

In years where shortages may still occur after utilization of carryover storage, additional regional shortage management measures, consistent with the Water Authority's Water Shortage and Drought Response Plan (described in **Section 11.2.1**), will be taken to fill the supply shortfall. These measures could include extraordinary conservation, achieved through voluntary or mandatory water-use restrictions. A description of the savings achieved during the 2012-2016 shortage period is included in **Section 11.2.3**. As discussed in the following section, the amount of savings achieved through extraordinary conservation measures could be limited due to demand hardening. In addition, the Water Authority could evaluate the option of securing dry-year transfers, which the Water Authority successfully acquired and utilized during the 2007-2011 shortage management period. (A description of the Water Authority's dry year transfer program is included in **Section 11.2.4**).

In accordance with the Act, Tables 9-3, 9-4, 9-5, 9-6, and 9-7 show the multiple dry water year assessments in five-year increments. Similar to the single dry-year assessment, the member agencies' surface and groundwater yields shown in these tables are reflective of supplies available during the present drought, beginning in 2012, in years 2013, 2014 and 2015. However, due to recent supply conditions, the analysis for the 2017 to 2019 period was based on a different assumption. For this period, it was assumed water supplies are based on current levels for the first year and reduced down to actual 2015 levels over the three-year cycle ending with 2019. While surface and groundwater yields are based on historic estimates and remain the same, recycled and brackish groundwater yields are based on projected growth in these member agency supplies. For the multiple dry-year reliability analysis, the conservative planning assumption is that Metropolitan will be allocating supplies to its member agencies. By assuming allocations in this reliability assessment, it allows the Water Authority to analyze how storage supplies could potentially be utilized and the likelihood of shortages. Currently, Metropolitan allocates supplies through its WSAP. Because it is uncertain in the future how Metropolitan will allocate supplies to its member agencies, the analysis in the tables assumes supplies are allocated based on preferential right to Metropolitan supplies. As discussed above in **Section 6.1.1**, Section 135, Preferential Right to Purchase Water, is included in the Metropolitan Act and allows a Metropolitan member agency to acquire, for use within the agency, supplies based on preferential right at any time.

The Water Authority's annual preferential right percentage of Metropolitan supplies, used in Tables 9-3 through 9-7, is estimated through 2040 and is based on Metropolitan's current method of calculating preferential rights. In 2015, a Superior Court ruled Metropolitan under-calculated the Water Authority's preferential right to Metropolitan water. That ruling is being appealed. The analysis assumes the total Metropolitan dry-year supplies available for allocation to be 1.2 MAF for the period of 2017 to 2019 due to temporal proximity to current dry conditions and depleted storage levels; and a decreasing amount of 1.4 MAF, 1.3 MAF, and 1.2 MAF for the first, second, and third year respectively for the remaining multi-year dry periods. A conservative methodology was employed due to the numerous uncertainties associated with identifying Metropolitan's future available supplies and storage. In **Section 10**, there are scenarios presented that modify the dry-year supplies available for allocation. This total supply assumes reduced deliveries from the State Water Project and Colorado River Aqueduct along with limited storage supplies. This conservative approach is based on Water Authority's experience with the current 5-year drought and its adverse impacts on imported water supplies.

Because of the closeness in time, the demands for the period of 2017 to 2019 were adjusted to align with current demands that are also dampened due the statewide Emergency Conservation Regulation currently in place. Specifically, the 2017 demands were adjusted to match demands from the Calendar Year 2017 Rates and Charges forecast to yield more accurate demand projections. Years 2018 and 2019 demands were then increased one percent from the previous year to account for minimal growth. As a result of this adjust to the 2017-2019 demands, there is a step-up in demand between Tables 9-3 and 9-4 that provides for a return to, and alignment with the undampened dry year demand projections developed for the 2015 Plan.

The rest of the multi dry-year periods have the first year based on the multi dry-year demand forecast with the next two years being increased one percent from the previous year to account for growth. This method for the multi dry-year events was used in order to account for the lower than normal demand increases being experienced by the Water Authority and its member agencies as they respond to the current drought and conservation efforts.



**Table 9-3. Multiple Dry Water Year Supply and Demand Assessment Five-Year Increments (AF/YR) – 2017-2019**

	2017	2018	2019
Member Agency Supplies	72,233	71,858	69,233
Water Authority Supplies	230,200	260,200	290,200
Metropolitan Allocation (Preferential Right)	223,560	224,400	225,120
<b>Total Estimated Core Supplies w/o Storage Takes</b>	525,993	556,458	584,553
Total Demands w/ Water Efficiency Savings	491,841	496,759	501,727
Potential Supply (Shortage) or Surplus <i>(Difference between Supplies and Demands)</i>	34,152	59,698	82,826
Utilization Carryover Supplies	0	0	0
<b>Total Projected Core Supplies w/ Utilization of Carryover Storage Supplies</b>	525,993	556,458	584,553
Remaining Potential Surplus Supply, or (Shortage) that will be handled through Management Actions	34,152	59,698	82,826

**Table 9-4. Multiple Dry Water Year Supply and Demand Assessment Five-Year Increments (AF/YR) – 2021-2023**

	2021	2022	2023
Member Agency Supplies	125,259	102,592	85,780
Water Authority Supplies	330,200	330,200	330,200
Metropolitan Allocation (Preferential Right)	263,900	245,310	226,680
<b>Total Estimated Core Supplies w/o Storage Takes</b>	719,359	678,102	642,660
Total Demands w/ Water Efficiency Savings	632,681	639,008	645,398
Potential Supply (Shortage) or Surplus <i>(Difference between Supplies and Demands)</i>	86,678	39,094	(2,738)
Utilization Carryover Supplies	0	0	2,738
<b>Total Projected Core Supplies w/ Utilization of Carryover Storage Supplies</b>	719,359	678,102	645,398
Remaining Potential Surplus Supply, or (Shortage) that will be handled through Management Actions	86,678	39,094	0

**Table 9-5. Multiple Dry Water Year Supply and Demand Assessment Five-Year Increments (AF/YR) – 2026-2028**

	<b>2026</b>	<b>2027</b>	<b>2028</b>
Member Agency Supplies	130,355	107,462	90,423
Water Authority Supplies	330,200	330,200	330,200
Metropolitan Allocation (Preferential Right)	264,600	245,570	226,440
<b>Total Estimated Core Supplies w/o Storage Takes</b>	<b>725,155</b>	<b>683,232</b>	<b>647,063</b>
Total Demands w/ Water Efficiency Savings	681,549	688,364	695,248
Potential Supply (Shortage) or Surplus <i>(Difference between Supplies and Demands)</i>	43,606	(5,133)	(48,185)
Utilization Carryover Supplies	0	5,133	40,000
<b>Total Projected Core Supplies w/ Utilization of Carryover Storage Supplies</b>	<b>725,155</b>	<b>688,364</b>	<b>687,063</b>
Remaining Potential Surplus Supply, or (Shortage) that will be handled through Management Actions	43,606	0	(8,185)

**Table 9-6. Multiple Dry Water Year Supply and Demand Assessment Five-Year Increments (AF/YR) – 2031-2033**

	<b>2031</b>	<b>2032</b>	<b>2033</b>
Member Agency Supplies	132,094	108,856	91,473
Water Authority Supplies	330,200	330,200	330,200
Metropolitan Allocation (Preferential Right)	262,780	243,490	224,280
<b>Total Estimated Core Supplies w/o Storage Takes</b>	<b>725,074</b>	<b>682,546</b>	<b>645,953</b>
Total Demands w/ Water Efficiency Savings	704,215	711,257	718,370
Potential Supply (Shortage) or Surplus <i>(Difference between Supplies and Demands)</i>	20,859	(28,711)	(72,417)
Utilization Carryover Supplies	0	28,711	40,000
<b>Total Projected Core Supplies w/ Utilization of Carryover Storage Supplies</b>	<b>725,074</b>	<b>711,257</b>	<b>685,953</b>
Remaining Potential Surplus Supply, or (Shortage) that will be handled through Management Actions	20,859	0	(32,417)

**Table 9-7. Multiple Dry Water Year Supply and Demand Assessment Five-Year Increments (AF/YR) – 2036-2038**

	2036	2037	2038
Member Agency Supplies	132,530	109,368	92,061
Water Authority Supplies	330,200	330,200	330,200
Metropolitan Allocation (Preferential Right)	260,260	241,410	222,480
<b>Total Estimated Core Supplies w/o Storage Takes</b>	722,990	680,978	644,741
Total Demands w/ Water Efficiency Savings	730,024	737,324	744,697
Potential Supply (Shortage) or Surplus <i>(Difference between Supplies and Demands)</i>	(7,034)	(56,346)	(99,956)
Utilization Carryover Supplies	7,034	40,000	40,000
<b>Total Projected Core Supplies w/ Utilization of Carryover Storage Supplies</b>	730,024	720,978	684,741
Remaining Potential Surplus Supply, or (Shortage) that will be handled through Management Actions	0	(16,346)	(59,956)

Under specific parameters assumed in the multi dry-year analysis, shortages are experienced, as shown in Tables 9-5 thru 9-7. The significant shortages are due to increasing water demands due to economic growth within the region and the approach of applying restricted supply from Metropolitan. As with the Single Dry Water Year Supply and Demand Assessment, these shortages could be eliminated should Metropolitan supplies approach the supply levels projected in Metropolitan's Draft 2015 UWMP Multiple Dry Year Supply Capability.

As stated in the single dry-year analysis, carryover storage would be utilized in order to lessen the impacts of a supply shortfall.

It should be emphasized that the amount of extraordinary conservation savings expected to be achieved through mandatory measures, such as water-use restrictions, could be less than that experienced in the previous shortage periods due to demand hardening. Responsiveness to drought pricing and general price increases will diminish because remaining essential uses are less responsive to price. This will reduce customer discretionary demands and create less flexibility in the managing of demand during shortages, which will increase the importance of acquiring supplemental dry-year supplies to eliminate or reduce potential supply shortages. **Section 11.2.4** discusses the Water Authority's potential dry-year supplies. Long-term permanent conservation savings is critical to ensuring water is used most efficiently and will help avoid or minimize drought situations. Due to potential demand hardening, shortage management measures such as water-use restrictions and drought pricing may not be as effective in the future in achieving necessary savings to help reduce the supply gap.

## 9.4 Reliability of Supply

The above sections identify the diverse mix of resources planned to meet future demands in both a normal and dry year. Implementation of this regional resource mix will require maintaining and

developing projects and programs by the Water Authority, its member agencies, and Metropolitan. The Water Authority coordinated with its member agencies and Metropolitan during preparation of the 2015 Plan on the future demands and supplies projected for the region. The steps being taken by the member agencies and Metropolitan to develop supplies are addressed in their respective UWMPs. **Section 4** contains the steps taken and remaining actions necessary to develop and maintain the Water Authority supplies.

The Act requires agencies to describe reliability of the water supply and vulnerability to seasonal and climatic shortage. **Section 9.2** and **Section 9.3** describe the results of the water supply reliability assessment for the region, during normal water years, single dry years, and multiple dry years. The Act also requires the 2015 Plan to contain historic data on supplies available for the three water year types. The following is the historic total supplies, both local and imported, that were utilized during the periods identified: Normal/average (607,200 AF) based on a 30-year average between 1986 and 2015, single dry year (477,458 AF) based on 2015, and multiple dry water years (581,828 AF, 590,119 AF, and 477,458 AF) based on years 2013–2015. Supplies utilized in a non-allocation dry period could exceed the supplies utilized in a normal year, due to the ability to purchase additional imported supplies from Metropolitan. It should also be noted that in the reliability assessment, contained in **Section 9.2**, the average local supply yields are not based on historic yields, but projected numbers provided by member agencies. These figures more accurately reflect the expected yield based on current local agency policies and procedures on operations and management of the supply.

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

The Act requires that, for any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, the agency describe, to the extent practicable, plans to replace that source with alternative sources or water demand management measures. As stated throughout the 2015 Plan, the Water Authority and its member agencies are planning to develop a diverse supply of resources. The unavailability of any one supply source will be buffered because of the diversity of the supplies: the region is not reliant on a single source. To replace or supplement an existing supply, the Water Authority could take steps to further long-term efficient water use and work with member agencies to further maximize development of recycled water, potable reuse, groundwater, and seawater desalination. To adequately plan for potential supply uncertainties and identify alternative sources, the 2015 Plan contains a scenario planning process described in **Section 10**.

## 9.5 Additional Planned Supply Projects

The mix of current and future supplies is developed jointly between the Water Authority and its member agencies. The mix of supplies is being represented in two ways. Verifiable supplies are those supplies identified by the Water Authority or member agencies as having achieved a level of certainty in their planning and implementation, such as where CEQA has been satisfied, permits are in hand, or contracts have been executed. As part of this general definition, these projects also have the political support of the governing body to move forward and be implemented at this time.

Verifiable supplies are included in water supply assessments and verifications prepared by retail water agencies and used by the cities and county in their land use decisions regarding available water supplies for growth under SB 221 and SB 610. Those projects with adequate documentation regarding implementation and supply utilization, or existing projects already planned for expansion, were included in the assessments discussed in **Sections 9.2** and **9.3**. Additional planned supplies are those that have not yet achieved the same level of certainty as the verifiable supplies, but have progressed to a point where the Water Authority or a member agency has taken significant financial actions to pursue the project. Additional planned supplies are not included in supply verifications for SB 221 and SB 610.

These additional planned supplies are important to the region for a number of reasons. The Water Authority and member agencies must continue to strive to develop cost-effective local resources that can further diversify the region's supplies and reduce demands for imported water from Metropolitan. They provide objectives for the region to work toward by resolving any funding, regulatory, and other constraints associated with implementation. As part of conducting comprehensive supply planning, both the verifiable and additional planned projects are evaluated in regard to meeting future demands and the need for supplemental supplies from Metropolitan. Table 9-8 includes the evaluation of verifiable and additional planned projects compared with projected water demands in a normal year. It is important to emphasize that this evaluation is presented as a potential supply scenario and not the region's reliability analysis for purposes of compliance with state laws governing approval of land use projects (SB 610 and SB 221).

**Table 9-8. Supply Scenario with Additional Planned Projects (Normal Year AF/YR)**

	2020	2025	2030	2035	2040
<b>Water Authority Supplies</b>					
IID Water Transfer	190,000	200,000	200,000	200,000	200,000
ACC and CC Lining Projects	80,200	80,200	80,200	80,200	80,200
Regional Seawater Desalination	50,000	50,000	50,000	50,000	50,000
<b>Sub-Total</b>	<b>320,200</b>	<b>330,200</b>	<b>330,200</b>	<b>330,200</b>	<b>330,200</b>
Water Authority Additional Planned (Desal)	0	5,600	5,600	61,600	61,600
<b>Water Authority Total</b>	<b>320,200</b>	<b>335,800</b>	<b>335,800</b>	<b>391,800</b>	<b>391,800</b>
<b>Member Agency Supplies</b>					
Verifiable Total	132,086	136,798	139,822	140,082	140,722
(Additional Planned)					
Surface Water	0	0	0	0	0
Water Recycling	2,840	9,926	10,926	10,926	10,926
Seawater Desalination	0	15,100	15,600	16,100	16,800
Potable Reuse	4,470	29,086	46,686	106,099	106,099
Brakish GW Recovery	0	0	0	0	0
Groundwater	3,100	3,100	3,600	3,600	3,600
<b>Member Agency Total</b>	<b>142,496</b>	<b>194,010</b>	<b>216,634</b>	<b>276,807</b>	<b>278,147</b>
<b>Total Projected Local Supplies</b>	<b>462,696</b>	<b>529,810</b>	<b>552,434</b>	<b>668,607</b>	<b>669,947</b>

<b>Metropolitan Water District Supplies</b>	120,486	102,043	101,166	3,717	27,688
<b>Total Supplies</b>	<b>583,182</b>	<b>631,853</b>	<b>653,600</b>	<b>672,324</b>	<b>697,635</b>
Total Demands w/ Water Efficiency Savings	583,182	631,853	653,600	672,324	697,635

<sup>1</sup> Normal water year demands based on 1960 – 2008 hydrology.

The specific member agency local recycled water, potable reuse and brackish groundwater projects included in the figures are listed in Tables F-2 and F-4, respectively, in Appendix F. Also included in Appendix F are conceptual projects identified by the member agencies.

**Appendix G**  
**Rainbow Drought Response Ordinance 15-08**

**ORDINANCE NO. 15-08**

**AN ORDINANCE OF RAINBOW MUNICIPAL WATER DISTRICT  
ADOPTING A DROUGHT RESPONSE CONSERVATION PROGRAM**

Be it ordained by the Board of Directors of Rainbow Municipal Water District as follows;

**WHEREAS**, article 10, section 2 of the California Constitution declares that waters of the State are to be put to beneficial use, that waste, unreasonable use, or unreasonable method of use of water be prevented, and that water be conserved for the public welfare; and

**WHEREAS**, conservation of current water supplies and minimization of the effects of water supply shortages that are the result of drought are essential to the public health, safety and welfare; and

**WHEREAS**, regulation of the time of certain water use, manner of certain water use, design of rates, method of application of water for certain uses, installation and use of water-saving devices, provide an effective and immediately available means of conserving water; and

**WHEREAS**, California Water Code sections 375 et seq. authorize water suppliers to adopt and enforce a comprehensive water conservation program; and

**WHEREAS**, adoption and enforcement of a comprehensive water conservation program will allow the Rainbow Municipal Water District to delay or avoid implementing measures such as water rationing or more restrictive water use regulations pursuant to a declared water shortage emergency as authorized by California Water Code sections 350 et seq.; and

**WHEREAS**, San Diego County is a semi-arid region and local water resources are scarce. The region is dependent upon imported water supplies provided by the San Diego County Water Authority, which obtains a substantial portion of its supplies from the Metropolitan Water District of Southern California. Because the region is dependent upon imported water supplies, weather and other conditions in other portions of this State and of the Southwestern United States affect the availability of water for use in San Diego County; and

**WHEREAS**, the San Diego County Water Authority has adopted an Urban Water Management Plan that includes water conservation as a necessary and effective component of the Water Authority's programs to provide a reliable supply of water to meet the needs of the Water Authority's 24 member public agencies, including the Rainbow Municipal Water District. The Water Authority's Urban Water Management Plan also includes a contingency analysis of actions to be taken in response to water supply shortages. This ordinance is consistent with the Water Authority's Urban Water Management Plan; and

**WHEREAS**, as anticipated by its Urban Water Management Plan, the San Diego County Water Authority, in cooperation and consultation with its member public agencies, has adopted a Drought Management Plan, which establishes a progressive program for responding to water supply limitations resulting from drought conditions. This ordinance is intended to be consistent with and to implement the Water Authority’s Drought Management Plan; and

**WHEREAS**, the Water Authority’s Drought Management Plan contains three stages containing regional actions to be taken to lessen or avoid supply shortages. This ordinance contains drought response levels that correspond with the Drought Management Plan stages; and

**WHEREAS**, the Rainbow Municipal Water District, due to the geographic and climatic conditions within its territory and its dependence upon water imported and provided by the San Diego County Water Authority, may experience shortages due to drought conditions, regulatory restrictions enacted upon imported supplies and other factors. The Rainbow Municipal Water District has adopted an Urban Water Management Plan that includes water conservation as a necessary and effective component of its programs to provide a reliable supply of water to meet the needs of the public within its service territory. The Rainbow Municipal Water District Urban Water Management Plan also includes a contingency analysis of actions to be taken in response to water supply shortages. This ordinance is consistent with the Urban Water Management Plan adopted by the Rainbow Municipal Water District; and

**WHEREAS**, the Governor of California issued an Executive Order on April 1, 2015 mandating certain water use restrictions and conservation targets for water utilities, and

**WHEREAS**, the State Water Resources Control Board adopted regulations implementing the Governor’s Executive Order on May 18, 2015, and

**WHEREAS**, the San Diego County Water Authority adopted Shortage Management Actions on May 14, 2015 that include allocations for the Transitional Special Agricultural Water Rate supply and the Municipal and Industrial supply in addition to adding new restrictions on residential watering days, and

**WHEREAS**, the water conservation measures and progressive restrictions on water use and method of use identified by this ordinance provide certainty to water users and enable Rainbow Municipal Water District to control water use, provide water supplies, and plan and implement water management measures in a fair and orderly manner for the benefit of the public.

**NOW, THEREFORE**, the Board of Directors of Rainbow Municipal Water District does ordain as follows:

**SECTION 1.0           DECLARATION OF NECESSITY AND INTENT**

(a) This ordinance establishes water management requirements necessary to conserve water, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, prevent unreasonable use of water, prevent unreasonable method of use of water within the Rainbow Municipal Water District (RMWD) in order to assure adequate

supplies of water to meet the needs of the public, and further the public health, safety, and welfare, recognizing that water is a scarce natural resource that requires careful management not only in times of drought, but at all times.

(b) This ordinance establishes regulations to be implemented during times of declared water shortages, or declared water shortage emergencies. It establishes four levels of drought response actions to be implemented in times of shortage, with increasing restrictions on water use in response to worsening drought conditions and decreasing available supplies.

(c) Level 1 condition drought response measures are voluntary and will be reinforced through local and regional public education and awareness measures that may be funded in part by RMWD. During drought response condition Levels 2 through 4, all conservation measures and water-use restrictions are mandatory and become increasingly restrictive in order to attain escalating conservation goals.

(d) During a Drought Response Level 2 condition or higher, the water conservation measures and water use restrictions established by this ordinance are mandatory and violations are subject to criminal, civil, and administrative penalties and remedies specified in this ordinance and as provided in RMWD Administrative or Municipal Code.

## **SECTION 2.0 DEFINITIONS**

(a) The following words and phrases whenever used in this chapter shall have the meaning defined in this section:

1. “Grower” refers to those engaged in the growing or raising, in conformity with recognized practices of husbandry, for the purpose of commerce, trade, or industry, or for use by public educational or correctional institutions, of agricultural, horticultural or floricultural products, and produced: (1) for human consumption or for the market, or (2) for the feeding of fowl or livestock produced for human consumption or for the market, or (3) for the feeding of fowl or livestock for the purpose of obtaining their products for human consumption or for the market. “Grower” does not refer to customers who purchase water subject to the Metropolitan Interim Agricultural Water Program or the Water Authority Special Agricultural Rate programs.

2. “Water Authority” means the San Diego County Water Authority.

3. “DMP” means the Water Authority’s Drought Management Plan in existence on the effective date of this ordinance and as readopted or amended from time to time, or an equivalent plan of the Water Authority to manage or allocate supplies during shortages.

4. “Metropolitan” means the Metropolitan Water District of Southern California.

5. "Person" means any natural person, corporation, public or private entity, public or private association, public or private agency, government agency or institution, school district, college, university, or any other user of water provided by the RMWD.

**SECTION 3.0 APPLICATION**

(a) The provisions of this ordinance apply to any person in the use of any water provided by the RMWD.

(b) This ordinance is intended solely to further the conservation of water. It is not intended to implement any provision of federal, State, or local statutes, ordinances, or regulations relating to protection of water quality or control of drainage or runoff. Refer to the local jurisdiction or Regional Water Quality Control Board for information on any stormwater ordinances and stormwater management plans.

(c) Nothing in this ordinance is intended to affect or limit the ability of the RMWD to declare and respond to an emergency, including an emergency that affects the ability of the RMWD to supply water.

(d) Notwithstanding any other section of this ordinance, the restrictions imposed upon the use of water herein do not apply to use of water from private wells or to recycled water.

(e) Nothing in this ordinance shall apply to use of water that is subject to a special supply program, such as the Water Authority Transitional Special Agricultural Water (TSAWR) Rate program, except as may be specified in that program. For instance, the water reductions contained in this ordinance shall not be in addition to any mandatory reductions which may apply to a participant in the TSAWR, unless expressly stated in the TSAWR. Violations of the conditions of special supply programs are subject to the penalties established under the applicable program. A person using water subject to a special supply program and other water provided by the RMWD is subject to this ordinance in the use of the other water.

**SECTION 4.0 DROUGHT RESPONSE LEVEL 1 – DROUGHT WATCH CONDITION**

(a) A Drought Response Level 1 condition is also referred to as a "Drought Watch" condition. A Level 1 condition applies when the Water Authority notifies its member agencies that due to drought or other supply reductions, there is a reasonable probability there will be supply shortages and that a consumer demand reduction is required in order to ensure that sufficient supplies will be available to meet anticipated demands. The General Manager shall declare the existence of a Drought Response Level 1 and take action to implement the Level 1 conservation practices identified in this ordinance.

(b) During a Level 1 Drought Watch condition, RMWD will increase its public education and outreach efforts to emphasize increased public awareness of the need to implement the following water conservation practices. [The same water conservation practices become mandatory if RMWD declares a Level 2 Drought Alert condition]:

1. Stop washing down paved surfaces, including but not limited to sidewalks, driveways, parking lots, tennis courts, or patios, except when it is necessary to alleviate safety or sanitation hazards.

2. Stop water waste resulting from inefficient landscape irrigation, such as runoff, low head drainage, or overspray, etc. Similarly, stop water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.

3. Irrigate residential and commercial landscape before 10 a.m. and after 6 p.m. only.

4. Use a hand-held hose equipped with a positive shut-off nozzle or bucket to water landscaped areas, including trees and shrubs located on residential and commercial properties that are not irrigated by a landscape irrigation system.

5. Irrigate nursery and commercial grower's products before 10 a.m. and after 6 p.m. only. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket or watering can. Irrigation of nursery propagation beds is permitted at any time. Watering of livestock is permitted at any time.

6. Use re-circulated water to operate ornamental fountains.

7. Wash vehicles using a bucket and a hand-held hose with positive shut-off nozzle, mobile high pressure/low volume wash system, or at a commercial site that re-circulates (reclaims) water on-site. Avoid washing during hot conditions when additional water is required due to evaporation.

8. Serve and refill water in restaurants and other food service establishments only upon request.

9. Offer guests in hotels, motels, and other commercial lodging establishments the option of not laundering towels and linens daily.

10. Repair all water leaks within five (5) days of notification by the RMWD unless other arrangements are made with the General Manager.

11. Use recycled or non-potable water for construction purposes when available.

(c) During a Drought Response Level 2 condition or higher, all persons shall be required to implement the conservation practices established in a Drought Response Level 1 condition.

**SECTION 5.0            DROUGHT RESPONSE LEVEL 2 – DROUGHT ALERT  
CONDITION**

(a) A Drought Response Level 2 condition is also referred to as a “Drought Alert” condition. A Level 2 condition may apply when the Water Authority notifies its member agencies that due to cutbacks caused by drought or other reduction in supplies, a consumer<sup>1</sup> demand reduction is required in order to have sufficient supplies available to meet anticipated demands. The RMWD Board of Directors shall consider the Water Authority declaration of a “Drought Alert” condition, and may declare the existence of a Drought Response Level 2 condition and direct the General Manager to implement the mandatory Level 2 conservation measures identified in this ordinance. The RMWD Board of Directors may make a determination to enter or exit the Drought Response Level 2 stage depending on a variety of factors, including but not limited to local water availability, RMWD’s ability to meet their allocation supply, and/or the financial impact of implementation on RMWD.

(b) All persons using RMWD water shall comply with Level 1 Drought Watch water conservation practices during a Level 2 Drought Alert, and shall also comply with the following additional conservation measures:

1. Limit residential and commercial landscape irrigation to no more than two (2) assigned days per week on a schedule established by the General Manager and posted by the RMWD. This section shall not apply to commercial growers or nurseries.

2. Limit lawn watering and landscape irrigation using sprinklers to no more than ten (10) minutes per watering station per assigned day. This provision does not apply to landscape irrigation systems using water efficient devices, including but not limited to: weather based controllers, drip/micro-irrigation systems and stream rotor sprinklers.

a. Operating irrigation systems in a manner that allows water to run off the property is defined as water waste. In cases where irrigating for 10 minutes per station will result in water runoff due to the inability of the soil or landscape materials to absorb that amount of water, customers shall alter their watering schedules to prevent such runoff. The customer shall modify the schedules to prevent runoff but shall ensure that the total reduction in irrigation is equivalent to the two day per week watering schedule. Customers may adjust their schedules to water on more than two days per week so long as the equivalent reduction in irrigation is achieved.

3. Water landscaped areas, including trees and shrubs located on residential and commercial properties, and not irrigated by a landscape irrigation system governed by section 5 (b) (1), on the same schedule set forth in section 5 (b) (1) by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation.

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<sup>1</sup> Also referred to as Municipal or Industrial (M&I) water user.

4. Repair all leaks within seventy-two (72) hours of notification by the RMWD unless other arrangements are made with the General Manager.

5. No application of potable water to outdoor landscapes is allowed during and within 48 hours of measureable rainfall.

**SECTION 6.0 DROUGHT RESPONSE LEVEL 3 – DROUGHT CRITICAL CONDITION**

(a) A Drought Response Level 3 condition is also referred to as a “Drought Critical” condition. A Level 3 condition applies when the Water Authority notifies its member agencies that due to increasing cutbacks caused by drought or other reduction of supplies, a consumer demand reduction is required in order to have sufficient supplies available to meet anticipated demands. The RMWD Board of Directors shall declare the existence of a Drought Response Level 3 condition and implement the Level 3 conservation measures identified in this ordinance.

(b) All persons using RMWD water shall comply with Level 1 Drought Watch and Level 2 Drought Alert water conservation practices during a Level 3 Drought Critical condition and shall also comply with the following additional mandatory conservation measures:

1. Limit residential and commercial landscape irrigation to no more than two (2) assigned days per week on a schedule established by the General Manager and posted by the RMWD. During the months of November through May, landscape irrigation is limited to no more than once per week on a schedule established by the General Manager and posted by the RMWD. This section shall not apply to commercial growers or nurseries.

2. Water landscaped areas, including trees and shrubs located on residential and commercial properties, and not irrigated by a landscape irrigation system governed by section 6 (b) (1), on the same schedule set forth in section 6 (b) (1) by using a bucket, hand-held hose with a positive shut-off nozzle, or low-volume non-spray irrigation.

3. Stop filling or re-filling swimming pools, spas, ornamental fountains, lakes ponds or other water features, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of a drought response level under this ordinance.

4. Stop washing vehicles except at commercial carwashes that re-circulate water, or by high pressure/low volume wash systems.

5. Repair all leaks within forty-eight (48) hours of notification by the RMWD unless other arrangements are made with the General Manager.

(c) Upon the declaration of a Drought Response Level 3 condition, no new potable water service shall be provided, no new temporary meters or permanent meters shall be provided, and no statements of immediate ability to serve or provide potable water service (such as, will serve letters, certificates, or letters of availability) shall be issued, except under the following circumstances:

1. A valid, unexpired building permit has already been issued for the project;  
or
2. In the opinion of the RMWD Board of Directors the project is necessary to protect the public's health, safety, and welfare; or
3. The applicant provides substantial evidence of an enforceable binding commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of RMWD.

This provision shall not be construed to preclude the resetting or turn-on of meters to provide continuation of water service or to restore service that has been interrupted **for a period of one year or less, provided that such period shall in no event commence before the effective date of this ordinance.**

(d) Upon the declaration of a Drought Response Level 3 condition, RMWD will suspend consideration of annexations to its service area until such time that the Drought Response Level 2 is decreased to a Drought Response Level 1 condition or lower.

(e) The RMWD may establish a water allocation for any property served by the RMWD using a method that does not penalize persons for previous implementation of conservation methods or the installation of water saving devices. The decision to establish a water allocation and the method utilized to determine the amount of the allocation shall be at the sole discretion of RMWD.

## **SECTION 7.0 DROUGHT RESPONSE LEVEL 4 – DROUGHT EMERGENCY CONDITION**

(a) A Drought Response Level 4 condition is also referred to as a “Drought Emergency” condition. A Level 4 condition applies when the Water Authority Board of Directors declares a water shortage emergency pursuant to California Water Code section 350 and notifies its member agencies that Level 4 requires a demand reduction in order for the RMWD to have maximum supplies available to meet anticipated demands. The RMWD Board of Directors shall declare a Drought Emergency in the manner and on the grounds provided in California Water Code section 350.

(b) All persons using RMWD water shall comply with conservation measures required during Level 1 Drought Watch, Level 2 Drought Alert, and Level 3 Drought Critical conditions and shall also comply with the following additional mandatory conservation measures:

1. Stop all landscape irrigation, except crops and landscape products of commercial growers and nurseries. This restriction shall not apply to the following categories of use unless the RMWD has determined that recycled water is available and may be lawfully applied to the use:

A. Maintenance of trees and shrubs that are watered on the same schedule set forth in section 6 (b) (1) by using a bucket, hand-held hose with a positive shut-off nozzle, or low-volume non-spray irrigation;

B. Maintenance of existing landscaping necessary for fire protection as specified by the Fire Marshal of the local fire protection agency having jurisdiction over the property to be irrigated;

C. Maintenance of existing landscaping for erosion control;

D. Maintenance of plant materials identified to be rare or essential to the well being of rare animals;

E. Maintenance of landscaping within active public facilities, including parks and playing fields, day care centers, school grounds, cemeteries, and golf course greens, provided that such irrigation does not exceed two (2) days per week according to the schedule established under section 6 (b) (1);

F. Watering of livestock; and

G. Public works projects and actively irrigated environmental mitigation projects.

2. Repair all water leaks within twenty-four (24) hours of notification by the RMWD unless other arrangements are made with the General Manager.

(c) The RMWD may establish a water allocation for any property served by the RMWD using a method that does not penalize persons for previous implementation of conservation methods or the installation of water saving devices. The decision to establish a water allocation and the method utilized to determine the amount of the allocation shall be at the sole discretion of RMWD.

## **SECTION 8.0 CORRELATION BETWEEN DROUGHT MANAGEMENT PLAN AND DROUGHT RESPONSE LEVELS**

(a) The correlation between the Water Authority's DMP stages and the RMWD's drought response levels identified in this ordinance is described herein. Under DMP Stage 1, the RMWD would implement Drought Response Level 1 actions. Under DMP Stage 2, the RMWD

would implement Drought Response Level 1 or Level 2 actions. Under DMP Stage 3, the RMWD would implement Drought Response Level 2, Level 3, or Level 4 actions.

(b) The drought response levels identified in this ordinance correspond with the Water Authority DMP as identified in the following table:

<b>Drought Response Levels</b>	<b>Use Restrictions</b>	<b>Conservation Target</b>	<b>DMP Stage</b>
1 - Drought Watch	Voluntary	Up to 10%	Stage 1 or 2
2 - Drought Alert	Mandatory	Up to 20%	Stage 2 or 3
3 - Drought Critical	Mandatory	>20 to 40%	Stage 3
4 - Drought Emergency	Mandatory	Above 40%	Stage 3

**SECTION 9.0 PROCEDURES FOR DETERMINATION AND NOTIFICATION OF DROUGHT RESPONSE LEVEL**

(a) The existence of a Drought Response Level 1 condition may be declared by the General Manager upon a written determination of the existence of the facts and circumstances supporting the determination. A copy of the written determination shall be filed with the Clerk or Secretary of the RMWD and provided to the RMWD Board of Directors. The General Manager may publish a notice of the determination of existence of Drought Response Level 1 condition in one or more newspapers, including a newspaper of general circulation within the RMWD. The RMWD may also post notice of the condition on their website.

(b) The existence of Drought Response Level 2 or Level 3 conditions may be declared by resolution of the RMWD Board of Directors adopted at a regular or special public meeting held in accordance with State law. The mandatory conservation measures applicable to Drought Response Level 2 or Level 3 conditions shall take effect on the tenth (10) day after the date the response level is declared. Within five (5) days following the declaration of the response level, or as soon thereafter as reasonably practicable, the RMWD shall publish a copy of the resolution in a newspaper used for publication of official notices.

(c) The existence of a Drought Response Level 4 condition may be declared in accordance with the procedures specified in California Water Code sections 351 and 352. The mandatory conservation measures applicable to Drought Response Level 4 conditions shall take effect on the tenth (10) day after the date the response level is declared. Within five (5) days following the declaration of the response level, or as soon thereafter as reasonably practicable, the RMWD shall publish a copy of the resolution in a newspaper used for publication of official notices. If the RMWD establishes a water allocation, it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the RMWD customarily mails the billing statement for fees or charges for on-going water service. Water allocation shall be effective on the fifth (5) day following the date of mailing or at such later date as specified in the notice.

(d) The RMWD Board of Directors may declare an end to a Drought Response Level by the adoption of a resolution at any regular or special meeting held in accordance with State law.

**SECTION 10.0      HARDSHIP VARIANCE**

(a) If, due to unique circumstances, a specific requirement of this ordinance would result in undue hardship to a person using agency water or to property upon which agency water is used, that is disproportionate to the impacts to RMWD water users generally or to similar property or classes of water uses, then the person may apply for a variance to the requirements as provided in this section.

(b) The variance may be granted or conditionally granted, only upon a written finding of the existence of facts demonstrating an undue hardship to a person using agency water or to property upon with agency water is used, that is disproportionate to the impacts to RMWD water users generally or to similar property or classes of water use due to specific and unique circumstances of the user or the user’s property.

1. Application. Application for a variance shall be a form prescribed by RMWD and shall be accompanied by a non-refundable processing fee in an amount set by resolution of the RMWD Board of Directors.

2. Supporting Documentation. The application shall be accompanied by photographs, maps, drawings, and other information, including a written statement of the applicant.

3. Required Findings for Variance. An application for a variance shall be denied unless the approving authority finds, based on the information provided in the application, supporting documents, or such additional information as may be requested, and on water use information for the property as shown by the records of the RMWD, all of the following:

A. That the variance does not constitute a grant of special privilege inconsistent with the limitations upon other RMWD customers.

B. That because of special circumstances applicable to the property or its use, the strict application of this ordinance would have a disproportionate impact on the property or use that exceeds the impacts to customers generally.

C. That the authorizing of such variance will not be of substantial detriment to adjacent properties, and will not materially affect the ability of the RMWD to effectuate the purpose of this chapter and will not be detrimental to the public interest.

D. That the condition or situation of the subject property or the intended use of the property for which the variance is sought is not common, recurrent or general in nature.

4. Approval Authority. The General Manager shall exercise approval authority and act upon any completed application no later than 30 days after submittal and may approve, conditionally approve, or deny the variance. The applicant requesting the variance shall be promptly notified in writing of any action taken. Unless specified otherwise at the time a variance is approved, the variance applies to the subject property during the term of the mandatory drought response.

5. Appeals to RMWD Board of Directors. An applicant may appeal a decision or condition of the General Manager on a variance application to the being mailed to the applicant. The appeal must be in the form of a written request for a hearing, and shall state the grounds for the appeal. At a public meeting, the RMWD Board of Directors shall act as the approval authority and review the appeal de novo by following the regular variance procedure. The decision of the RMWD Board of Directors is final.

## **SECTION 11.0 VIOLATIONS AND PENALTIES**

(a) Any person, who uses, causes to be used, or permits the use of water in violation of this ordinance is guilty of an offense punishable as provided herein.

(b) Each day that a violation of this ordinance occurs is a separate offense.

(c) Administrative fines may be levied for each violation of a provision of this ordinance as follows:

1. One hundred dollars for a first violation.
2. Two hundred dollars for a second violation of any provision of this ordinance within one year from occurrence of the first violation.
3. Five hundred dollars for each additional violation of this ordinance within one year of the first violation.

(d) Violation of a provision of this ordinance is subject to enforcement through installation of a flow-restricting device in the meter.

(e) Each violation of this ordinance may be prosecuted as a misdemeanor punishable by imprisonment in the county jail for not more than thirty (30) days or by a fine not exceeding \$1,000, or by both as provided in Water Code section 377.

(f) Willful violations of the mandatory conservation measures and water use restrictions as set forth in Section 7.0 and applicable during a Level 4 Drought Emergency condition may be enforced by discontinuing service to the property at which the violation occurs as provided by Water Code section 356.

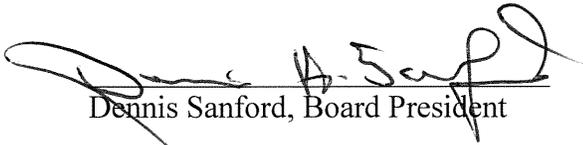
(g) All remedies provided for herein shall be cumulative and not exclusive.

**SECTION 12.0 EFFECTIVE DATE**

This ordinance is effective immediately upon adoption or as otherwise established by State law for RMWD.

**PASSED, APPROVED AND ADOPTED** this 23rd day of June, 2015, by the following vote:

**AYES:** Directors Brazier, Lucy, Sanford, and Walker  
**NOES:** Director Griffiths  
**ABSTAIN:** None  
**ABSENT:** None

  
Dennis Sanford, Board President

**ATTEST:**  
  
Dawn Washburn, Board Secretary

**Appendix H**  
**RMWD BMP Report 2013-2014**

# 2014 CUWCC Report

## (Screenshots)

**Reporting Unit:**Rainbow Municipal Water District  
**Signatory:**Rainbow Municipal Water District  
**RU Type:**Retail

Welcome **Maricela Munoz** | Logout  
Role: **Editor**

CUWCC Reporting Database

Home | Annual Input Forms | Base Year Data | Reports | Reporting Unit

### Reporting Year

< 2014 >

**Water Sources and Usage**

- Potable Water Sources
- Non Potable Water Sources
- Potable Water Uses
- Non Potable Water Uses

**BMP 1**

- 1.1 Retail Operations Practices**
- 1.2 Retail Water Loss Control
- 1.3 Retail Metering with Commodity
- 1.4 Retail Conservation Pricing

**BMP 2**

- 2.1 Public Information Programs
- 2.2 School Education

**BMP 3 - Residential**

- 3 Traditional / FlexTrack

**BMP 4 - CII**

- 4 Traditional / FlexTrack

**BMP 5 - Landscape**

- 5 Traditional / FlexTrack

**GPCD**

- GPCD

### BMP 1.1 Operations Practices

Provisional Coverage Indication **ON TRACK**  
[Online Help](#)

**Submitted to CUWCC**  
**5/31/2016 5:19:53 PM**

Form Complete <sup>?</sup> Form Status: Submitted

#### Conservation Coordinator

Conservation Coordinator  Yes  No  N/A **ON TRACK**

#### Contact Information

First Name	Maricela
Last Name	Munoz
Title	Billing Specialist
Phone	760-728-1178
Email	mmunoz@rainbowmwd.com

#### Water Waste Prevention

An agency **MUST** do at least one or more of the following six strategies; although water agencies are encouraged to do them all when possible.

Option A: Describe (upload or provide an electronic link) the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP. **ON TRACK**

Upload File

*NA*

URL

Describe Ordinance or Terms *90 characters remaining*

Ordinance 11-01 declaring that waste, unreasonable use, or unreasonable method of use of water be prevented, and that water be conserved for the public welfare.



### Reporting Year

< 2014 >

#### Water Sources and Usage

Potable Water Sources

Non Potable Water Sources

Potable Water Uses

Non Potable Water Uses

#### BMP 1

1.1 Retail Operations Practices

#### 1.2 Retail Water Loss Control

1.3 Retail Metering with Commodity

1.4 Retail Conservation Pricing

#### BMP 2

2.1 Public Information Programs

2.2 School Education

#### BMP 3 - Residential

3 Traditional / FlexTrack

Agency Located and Repaired Unreported Leaks to the Extent Cost Effective

Yes  No  N/A

ON TRACK

Type of Program Activities Used to Detect Unreported Leaks

22 characters remaining

Customer service staff utilize customer service database software to identify spikes in usage/reads. Meter reading staff respond by either visiting the site/meter where spikes are occurring, notify customer, and/or make repairs.

Does your agency maintain in-house records of audit or the completed AWWA worksheet for the completed audit which could be forwarded to CUWCC?

Yes  No  N/A

ON TRACK

Does your agency keeps records of each component analysis performed, and incorporates results into future annual standard water balances?

Yes  No  N/A

#### Annual Summary Information

ON TRACK

Complete the following table with annual summary information (required for reporting years 2-5 only)

Total Leaks Repaired	Economic Value Of RealLoss	Economic Value Of AppLoss	Miles Of System Surveyed For Leaks	Pressure Reduction Undertaken for loss reduction	Cost Of Intervention	Linear feet of pipe renewal and rehabilitation	Water Saved (AF/Year)
124	52,281.00	937,375.0	315.00	<input type="checkbox"/>			

**Reporting Year**

< 2014 >

**Water Sources and Usage**

- Potable Water Sources
- Non Potable Water Sources
- Potable Water Uses
- Non Potable Water Uses

**BMP 1**

- 1.1 Retail Operations Practices
- 1.2 Retail Water Loss Control

**1.3 Retail Metering with Commodity**

- 1.4 Retail Conservation Pricing

**BMP 2**

- 2.1 Public Information Programs
- 2.2 School Education

**BMP 3 - Residential**

- 3 Traditional / FlexTrack

**BMP 4 - CII**

- 4 Traditional / FlexTrack

**BMP 5 - Landscape**

- 5 Traditional / FlexTrack

**GPCD**

GPCD

[Review / Submit](#)

**BMP 1.3 Metering with Commodity Rates** Provisional Coverage Indication **NOT ON TRACK**  
Online Help

**Submitted to CUWCC  
5/31/2016 5:19:53 PM**

**Form Complete** ? Form Status: Submitted

**Implementation**

ON TRACK

Does your agency have any unmetered service connections?  Yes  No  N/A

If YES, has your agency completed a meter retrofit plan?  Yes  No  N/A

If YES, number of previously unmetered accounts fitted with meters during reporting year:

ON TRACK

Are all new service connections being metered?  Yes  No  N/A

Are all new service connections being billed volumetrically?  Yes  No  N/A

ON TRACK

Has your agency completed and submitted electronically to the Council a written plan, policy or program to test, repair and replace meters?  Yes  No  N/A ?

*NA*

**Please Fill Out The Following Matrix**

Account Type	# Metered Accounts	# Metered Accounts Read	# Metered Accounts Billed by Volume	Billing Frequency Per Year	# Estimated Bills/Year	# Of Meter Readings per Year
Single-Family	5,117.00	5,117.00	5,117.00	Monthly	61,404.00	61,404.00
Multi-Family	88.00	88.00	88.00	Monthly	1,056.00	1,056.00
Commercial	255.00	255.00	255.00	Monthly	3,060.00	3,060.00
Agricultural	2,362.00	2,362.00	2,362.00	Monthly	28,344.00	28,344.00



Reporting Year

< 2014 >

Water Sources and Usage

- Potable Water Sources
- Non Potable Water Sources
- Potable Water Uses
- Non Potable Water Uses

BMP 1

- 1.1 Retail Operations Practices
- 1.2 Retail Water Loss Control
- 1.3 Retail Metering with Commodity

1.4 Retail Conservation Pricing

BMP 2

- 2.1 Public Information Programs
- 2.2 School Education

BMP 3 - Residential

- 3 Traditional / FlexTrack

BMP 4 - CII

- 4 Traditional / FlexTrack

BMP 5 - Landscape

- 5 Traditional / FlexTrack

GPCD

GPCD

BMP 1.4 Retail Conservation Pricing

Provisional Coverage Indication

[Online Help](#)

Submitted to CUWCC  
5/31/2016 5:19:53 PM

Form Complete

Form Status: Submitted

A. Implementation (Water Rate Structure)

Based on Rate Structure **Not On Track**  
Based on Revenue **Not On Track**

Enter the Water Rate Structures that are assigned to the majority of your customers, by customer class.

Rate Structure Option	Customer Class Name	Total Revenue Commodity Charges	Total Revenue Customer Meter/Service (Fixed) Charges	New
Uniform	Single-Family	5,691,834.00	4,458,237.00	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Uniform	Multi-Family	396,639.00	150,677.00	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Uniform	Agricultural	8,150,338.00	4,483,452.00	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Uniform	Commercial	356,619.00	260,100.00	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
		\$14,595,430.00	\$9,352,466.00	

B. Implementation Options (Compliance with Conservation Pricing Options (Water))

Please Select an Option

Option 1: Annual Revenue As Reported  Option 2: Canadian Water Wastewater Assn Rate Design Model

Use 3 years average instead of most recent year

If CWWA is selected, please upload spreadsheet here.

NA

Canadian Water & Wastewater Association Rate Design Model Implementation

C. Canadian Water & Wastewater Association

## Reporting Year

< 2014 >

### Water Sources and Usage

- Potable Water Sources
- Non Potable Water Sources
- Potable Water Uses
- Non Potable Water Uses

### BMP 1

- 1.1 Retail Operations Practices
- 1.2 Retail Water Loss Control
- 1.3 Retail Metering with Commodity

### 1.4 Retail Conservation Pricing

#### BMP 2

- 2.1 Public Information Programs
- 2.2 School Education

#### BMP 3 - Residential

- 3 Traditional / FlexTrack

#### BMP 4 - CII

- 4 Traditional / FlexTrack

#### BMP 5 - Landscape

- 5 Traditional / FlexTrack

### GPCD

\$0.00

\$0.00

## D. Retail Waste Water (Sewer) Rate Structure by Customer Class

Does your agency provide sewer service?

Yes  No  N/A

Select the Retail Waste Water (Sewer) Rate Structure assigned to the majority of your customers within a specific customer class.

Rate Structure Option	Customer Class Name	Total Revenue Commodity Charges	Total Revenue Customer Meter/Service (Fixed) Charges
Non-Volumetric Flat Rate	Single-Family	2,160,538.00	
Non-Volumetric Flat Rate	Other	389,322.00	247,812.00
		\$2,549,860.00	\$247,812.00

[Option 3: Click here to use option 3 and/or to report your Agency's good faith efforts - redirects to new page](#)

### At Least As Effective As

Agency is implementing an 'At Least As Effective As' variant of this BMP?

Yes  No  N/A

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

250 characters remaining

Please Upload Document(s)

*NA*

### Exemption Request

**Reporting Year**

< 2014 >

**Water Sources and Usage**

- Potable Water Sources
- Non Potable Water Sources
- Potable Water Uses
- Non Potable Water Uses

**BMP 1**

- 1.1 Retail Operations Practices
- 1.2 Retail Water Loss Control
- 1.3 Retail Metering with Commodity
- 1.4 Retail Conservation Pricing

**BMP 2**

**2.1 Public Information Programs**

- 2.2 School Education

**BMP 3 - Residential**

- 3 Traditional / FlexTrack

**BMP 4 - CII**

- 4 Traditional / FlexTrack

**BMP 5 - Landscape**

- 5 Traditional / FlexTrack

**GPCD**

**BMP 2.1 Public Information Programs**

Provisional Coverage Indication **ON TRACK**  
[Online Help](#)

**Submitted to CUWCC**  
**5/31/2016 5:19:53 PM**

**Form Complete** ?

**Form Status: Submitted**

Are there one or more wholesale agencies performing public outreach which can be counted to help your agency comply with the BMP?

Yes  No  N/A

If "Yes" please select council wholesale agencies;

San Diego County Water Authority v

Please provide the name of agency, contact name and email address if not A Council Group 1 member.

*133 characters remaining*

SAN DIEGO COUNTY WATER AUTHORITY  
 LORI SWANSON  
 LSWANSON@SDCWA.ORG

Report a minimum of four water conservation related contacts your agency had with the public during the year.

**ON TRACK**

**Public Information Programs List**

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

Number of Public Contacts	Public Information Programs
7,160	Newsletter articles on conservation
7,160	Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets
14,320	

**Contact with the Media**

Yes  No  N/A

**ON TRACK**

**Media Contacts List**

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

## Reporting Year

< **2014** >

### Water Sources and Usage

Potable Water Sources

Non Potable Water Sources

Potable Water Uses

Non Potable Water Uses

### BMP 1

1.1 Retail Operations Practices

1.2 Retail Water Loss Control

1.3 Retail Metering with Commodity

1.4 Retail Conservation Pricing

### BMP 2

#### 2.1 Public Information Programs

2.2 School Education

### BMP 3 - Residential

3 Traditional / FlexTrack

### BMP 4 - CII

4 Traditional / FlexTrack

### BMP 5 - Landscape

5 Traditional / FlexTrack

### GPCD

GPCD

Number of Media Contacts	Media Contacts Type
4	News releases
4	

### Agency Website Updates

Enter your agency's URL (website address):

www.rainbowmwd.com

232 characters remaining

Describe a minimum of four water conservation related updates to your agency's website that took place during the year:

updates rebates  
updates watersmart web site  
updates Metropolitan water rebates  
updated Mission Resource Conservation Audits

124 characters remaining

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

Yes  No  N/A

ON TRACK

### Public Information Programs Annual Budget

Enter budget for public outreach programs. You may enter total budget in a single line or break the budget into discrete categories by entering many rows. Please indicate if personnel costs are included in the entry.

Category	Amount	Personnel Costs Included?	Comments
Public Relations and Conservation	2,000.00	<input checked="" type="checkbox"/>	
\$2,000.00			

### Public Information Expenses

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question related to your budget. For example, if you included personnel costs in the budget entered above, be sure to include them here as well.

Expense Category	Expense Amount	Personnel Costs Included?
------------------	----------------	---------------------------

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**5/31/2016 5:19:53 PM**

**Form Complete** ?

**Form Status: Submitted**

**Reporting Year**

< **2014** >

**Water Sources and Usage**

- Potable Water Sources
- Non Potable Water Sources
- Potable Water Uses
- Non Potable Water Uses

**BMP 1**

- 1.1 Retail Operations Practices
- 1.2 Retail Water Loss Control
- 1.3 Retail Metering with Commodity
- 1.4 Retail Conservation Pricing

**BMP 2**

- 2.1 Public Information Programs

**2.2 School Education**

**BMP 3 - Residential**

- 3 Traditional / FlexTrack

**BMP 4 - CII**

- 4 Traditional / FlexTrack

**BMP 5 - Landscape**

- 5 Traditional / FlexTrack

**GPCD**

GPCD

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**Does your agency implement a school education program?**  Yes  No  N/A

Are there one or more wholesale agencies performing school education programs which can be counted to help your agency comply with the BMP?

San Diego County Water Authority

Please provide the name of Agency, contact name and email address if not CUWCC Group 1 members.

LORI SWANSON  
LSWANSON@SDCWA.ORG

**ON TRACK**

Materials meet state education framework requirements.

Description: *192 characters remaining*

Curriculum Materials developed and/ or provided by agency.

**ON TRACK**

Materials distributed to K-6 students.

Description of materials distributed to K-6 students: *210 characters remaining*

Bewaterwise dvds, History video or DVD

Number of student reached.

5000

Materials distributed to 7-12 students. (optional)

Description of materials distributed to 7-12 students *169 characters remaining*

Water quality kits for the High school students and coodie catchers for theaters.

Annual budget for school education program.

**ON TRACK**

\$7500.00

**Reporting Year**

< **2014** >

**Water Sources and Usage**

Potable Water Sources

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Potable Water Uses

Non Potable Water Uses

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5 Traditional / FlexTrack

**GPCD**

GPCD

**Review / Submit**

\$7500.00

ON TRACK

194 characters remaining

Description of all other water supplier education programs.

Youth and scout merit patch program. Splash science lab.

**School Program Activities**

**Classroom presentations:**

Number of presentations

Number of attendees

250 characters remaining

Describe the topics covered in your classroom presentations:

**Large group assemblies:**

Number of presentations

Number of attendees

**Children's water festivals or other events:**

Number of presentations

1

Number of attendees

1000

**Cooperative efforts with existing science/water education programs (various workshops, science fair awards or judging) and follow-up:**

Number of presentations

Number of attendees

**Other methods of disseminating information (i.e. themed age-appropriate classroom loaner kits):**

Description

250 characters remaining

Number distributed

**Staffing children's booths at events and festivals:**

Number of booths

2

Number of attendees

500

**Water conservation contests such as poster and photo:**

## Reporting Year

< 2014 >

### Water Sources and Usage

Potable Water Sources

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Potable Water Uses

Non Potable Water Uses

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5 Traditional / FlexTrack

### GPCD

GPCD

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### Staffing children's booths at events and festivals:

Number of booths  
2

Number of attendees  
500

### Water conservation contests such as poster and photo:

Description *220 characters remaining*  
PARTICIPATED IN WATER CALENDAR

Number of Participants  
300

### Offer monetary awards/funding or scholarships awards to students:

Number offered  
0

Total funding  
0

### Teacher training workshops:

Number of presentations  
0

Number of attendees  
0

### Fund and/or staff student field trips to treatment facilities, recycling facilities, water conservation gardens, etc.:

Number of tours or field trips  
50

Number of participants  
300

### College internships in water conservation offered:

Number of internships  
0

Total funding  
0

### Career fair/workshops:

Number of presentations  
0

Number of attendees  
0

### Additional program(s) supported by agency:

Not mentioned above  
*250 characters remaining*

Number of events (if applicable)  
0

Number of participants  
0

Total reporting period budget expenditures for school education programs (include all agency costs):  
0

### At Least As Effective As

Is your Agency implementing an "At Least As Effective As" Variant of this BMP?  Yes  No  N/A

If Yes, please explain in detail how you implemented it.

## Reporting Year

< 2014 >

### Water Sources and Usage

Potable Water Sources

Non Potable Water Sources

Potable Water Uses

Non Potable Water Uses

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### BMP 3 - Residential

3 Traditional / FlexTrack

### BMP 4 - CII

4 Traditional / FlexTrack

## BMP 3 Residential

[Online Help](#)

Form Complete ?

Save All

From the Coverage Option dropdown menu, select the track you want to use for coverage in this BMP. You can enter data for all tracks in this form. The data and water savings are saved for future use. Data and equations corresponding to the track you select here are used in this year's coverage report.

Coverage Option: GPCD

Calculate

### Total Measured Water Savings (AF/Year)

Form Status: Not Submitted

Traditional	FlexTrack	Total	FlexTrack Target	Prior Activities Credit ?
2.02	0	2.02	0.05	

From the Coverage Option drop down menu to the right, select the track you want to use for coverage in this BMP. You can enter data for all tracks in this form. The data and water savings are saved for future use. Data and equations corresponding to the track you select here are used in this year's coverage report.

### Residential Assistance / Landscape Water Survey

#### Traditional

	Single Family Accounts	Target	Coverage	Multi Family Units	Target	Coverage
Total Number	45			0		
Total Number Of Leak Det Surveys	45	0.68	ONTRACK	0	0	
Total Number Of Showerheads	0					
Total Number Of Faucet Aerators	0			0		
Total Number of Landscape Water Survey	45	0.68	ONTRACK	0		

Has your agency reached a 75% market saturation for showerheads?  Yes  No  N/A

## Reporting Year

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### Water Sources and Usage

Potable Water Sources

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Potable Water Uses

Non Potable Water Uses

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4 Traditional / FlexTrack

#### Traditional

	Target	Coverage
Number of installations for HECWs	0	0.45
Enter the Average Water Factor for all installations if it is less than 5.0	5	
Are financial incentives provided for HECWs ?	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A	
Has your agency completed a HECW Market Penetration Study ?	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A	

#### HECW Market Penetration Study Documents

Choose File No file chosen  
Upload Clear

#### Flex

If there are water savings in this measure, upload your back up data, or a methodology Spreadsheet that you have created. ?

Measured Water Savings AF/YR

Choose File No file chosen  
Upload Clear

0

### WaterSense Specification (WSS) toilets



### Reporting Year

< 2014 >

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#### GPCD

GPCD

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Provisional Coverage Indication **ON TRACK**

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### BMP 1.2 Water Loss Control

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Form Complete [?](#) Form Status: Submitted

#### AWWA Water Audit

Agency to complete a water audit and balance using the AWWA software  Yes  No  N/A **ON TRACK**

Upload Worksheets (AWWA Water Audit) [?](#)

Uploaded filename: [Copy of AWWA-WAS-v5-09152014.xls](#) **ON TRACK**

Water Audit Validity Score  **ON TRACK**

Agency Completed Training In The AWWA Water Audit Method  Yes  No  N/A **ON TRACK**

Agency Completed Training In The Component Analysis Process  Yes  No  N/A **ON TRACK**

Completed/Updated the Component Analysis (at least every 4 years) (Effective from 2013)  Yes  No  N/A **ON TRACK**

Component Analysis Completed/Updated Date:  format: mm/dd/yyyy

#### Water Loss Performance

Agency repaired all reported leaks & breaks to the extent cost effective  Yes  No  N/A **ON TRACK**

#### Recording Keeping Requirements Beginning in Year 2

Does your agency maintain a record keeping system for the following?

- |   |   |
|---|---|
| Date/Time Leak Reported <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A   | Leak Location <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A                           |
| Type of Leaking Pipe Segment or Fitting <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A                           | Leak Running Time From Report to Repair <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A |
| Leak Volume Estimate : <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A  | Cost of Repair: <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A                         |
| Do you have an infrastructure rehabilitation and renewal program? <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A |   |

## Reporting Year

< 2014 >

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GPCD

[Review / Submit](#)

Form Complete <sup>?</sup>

Save ALL

From the Coverage Option dropdown menu, select the track you want to use for coverage in this BMP. You can enter data for all tracks in this form. The data and water savings is saved for future use. Data and equations corresponding to the track you select here is used in this year's coverage report.

Coverage Option

Calculate

### Total Measured Water Savings (AF/Year)

Form Status: Not Submitted

Traditional	FlexTrack	Total	FlexTrack Target	Prior Activities <sup>?</sup>
<input type="text" value="1225.74"/>	<input type="text" value="0"/>	<input type="text" value="1225.74"/>	<input type="text" value="575.21"/>	<input type="text"/>

You must enter all measured water savings manually entered in the summary cells on the right. For each measure entered, upload a spreadsheet with sufficient information to show the way that water savings were measured and that the measure was adequately tracked (i.e., all relevant data was collected) - in some cases there are specific data points also requested in the flex track data entry form which are necessary to show that the measure was implemented as described.

### 1) Accounts with Dedicated Irrigation Meters

Not On Track

#### Traditional

- a) Number of dedicated irrigation meter accounts
- b) Number of dedicated irrigation meter accounts with water budgets
- c) Aggregate water use for all dedicated non-recreational landscape accounts with water budgets
- d) Aggregate acreage assigned water budgets for dedicated non-recreational landscape accounts with budgets
- Aggregate acreage of recreational areas assigned water budgets for dedicated recreational landscape accounts with budgets
- Preserved water use records and budgets for customers with dedicated landscape irrigation accounts for at least four years  Yes  No  N/A

If there are water savings in this measure, upload your backup data or the methodology spreadsheet that you have created. <sup>?</sup>

Measured Water Savings (AF/Year)