2015
URBAN WATER MANAGEMENT PLAN

June 22, 2016

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ABBREVIATIONS

2010 Plan	2010 Urban Water Management Plan
2015 Plan	2015 Urban Water Management Plan
AAC	All-American Canal
Act	Urban Water Management Planning Act
AF	acre-feet
AF/YR	acre-feet per year
BMPs	Best Management Practices (Water Conservation)
CC	Coachella Canal
CEQA	California Environmental Quality Act
CIMIS	California Irrigation Management Information System
CVWD	Coachella Valley Water District
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
DMP	Drought Management Plan
DPH	Department of Public Health
DPS	Disinfection Byproducts
DWR	Department of Water Resources (State of California)
EWPCF	Encina Wastewater Pollution Control Facility
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ETo	Evapotranspiration
FY	Fiscal Year
IAWP	Interim Agricultural Water Program
IID	Imperial Irrigation District
lb/day	pounds per day
M&I	municipal & industrial
MAF	million acre-feet
MAF/YR	million acre-feet per year
MCL	California Maximum Contaminant Level
Metropolitan	Metropolitan Water District of Southern California
mg/l	milligrams per liter
MGD	million gallons per day
MOU	Memorandum of Understanding - Urban Water Conservation in California
pCi/l	picocuries per liter
QSA	Quantification Settlement Agreement
RO	reverse osmosis
ROD	Record of Decision
SANDAG	San Diego Association of Governments
SCADA	Supervisory Control and Data Acquisition
SEMS	Standardized Emergency Management System
SWA	Source Water Assessment

SWRP	Shadowridge Water Reclamation Plant
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
UWMP	Urban Water Management Plan
µg/l	micrograms per liter
VID	Vista Irrigation District
Water Authority	San Diego County Water Authority
WRMP	Water Reclamation Master Plan
WTP	Water Treatment Plant

CHAPTER 1 INTRODUCTION AND OVERVIEW

1.1 CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT

The California Water Code requires all urban water suppliers in the state to prepare urban water management plans and update them every five years. These plans satisfy the requirements of the Urban Water Management Planning Act of 1984 (Act), including amendments that have been made to the Act. Sections 10610 through 10657 of the California Water Code detail the information that must be included in these plans, as well as who must file them. Appendix A contains the text of the Act.

Since 2010, a number of changes have been made to the Act. Amendments provided for narrative descriptions of demand management measures implemented to achieve water use targets as well as the quantification and reporting on distribution system water loss. The following is a summary of significant changes in the Act that have occurred since the Vista Irrigation District (VID) prepared its 2010 Urban Water Management Plan (2010 Plan):

- Water Code Section 10631.1(f)(1) requires water suppliers to provide narratives describing the water demand management measures implemented over the past five (5) years and water demand management measures that plan to be implemented to assist the water supplier in achieving its water use targets.

- Water Code Section 10621(d) requires each urban water supplier to submit its 2015 Urban Water Management Plan to the California Department of Water Resources (DWR) by July 1, 2016.

- Water Code Section 10644(a)(2) requires that an urban water management plan (UWMP), or amendments to an UWMP, be submitted electronically to DWR. Additionally, this section requires an UWMP, or amendments to an UWMP, to include any standardized forms, tables, or displays specified by DWR.

- Water Code Sections 10631(e)(1)(J) and 10631(e)(3)(A) and (e)(3)(B) require an UWMP to quantify and report on distribution system loss. The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the DWR. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

- Water Code Section 10631(e)(4) provides for water use projects to account for and include water saving estimates that result from adopted codes, standards, ordinances or transportation and land use plan when that information is available and applicable to an urban water supplier.

- Water Code Sections 10631.2(a) and (b) provide 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 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.

In addition, DWR will consider whether the urban water supplier has submitted an updated plan when determining eligibility for funds made available pursuant to any program administered by the department (Water Code Section 10631.5).

1.2 SENATE BILL 7 OF THE SEVENTH EXTRAORDINARY SESSION

In addition to changes in the Act, the California Legislature passed Senate Bill 7 of the Seventh Extraordinary Session (SBX 7-7) on November 10, 2009. This new law seeks to achieve a 20 percent statewide reduction in urban per capita water use in California by December 31, 2020. The measure requires urban retail water suppliers to develop urban water use targets to help meet the 20 percent goal by 2020 and an interim goal of 10 percent by 2015.

The bill includes reporting requirements in upcoming urban water management plans. Specifically, urban retail water suppliers must include in their urban water management plans the following information from their target setting process: (1) baseline daily per capita water use; (2) urban water use target; (3) interim urban water use target; and (4) compliance daily per capita water use. An urban retail water supplier may update its 2020 target in its 2015 urban water management plan. Appendix A also contains the text of SBX 7-7.

VID addresses the reporting requirements as well as actions it is taking to help achieve the urban per capita water use target pursuant to SBX 7-7 in Chapter 9, Demand Management Measures, of its 2015 Urban Water Management Plan (2015 Plan).

1.3 SENATE BILLS 610 AND 221

Water Code Sections 10910 through 10914 and Government Code Sections 65867.5, 66455.3 and 66473.7 (commonly referred to as SB 610 and SB 221) amended state law to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires that the water purveyor of the public water system prepare a water supply assessment to be included in the environmental documentation of certain large proposed projects. SB 221 requires affirmative written verification from the water purveyor of the public water system that sufficient water supplies are available for certain large residential subdivisions of property prior to approval of a tentative map.

Chapter 6, System Supplies, of VID's 2015 Plan contains documentation on the existing and planned water supplies being developed by VID and its wholesale water suppliers, the San

Diego County Water Authority (Water Authority) and the Metropolitan Water District of Southern California (Metropolitan). Specific documentation verifying Water Authority and Metropolitan supplies can be found in their respective plans.

1.4 WATER SUPPLY MANAGEMENT POLICY

VID's water supply management policy can best be described by its mission statement. "The mission of the Vista Irrigation District is to manage available resources to meet the present and future water needs of our service area by providing a reliable supply of high quality water in an environmentally and economically responsible manner…" This means implementing water supply management programs, such as conjunctive use and conservation, to maximize the use of available local resources and minimize VID's need to receive imported water. Below is a discussion of supply management programs used by VID.

Conjunctive Use Program

VID first employed the practice of conjunctive use in 1954 when it drilled 38 wells in the Warner Valley Groundwater Basin (DWR Basin 9-08, "Warner Basin") to supplement its local surface water supply, Lake Henshaw. Today, VID has 16 production wells that pump from depths of 150 to 350 feet, depending on rainfall and length and extent of pumping operations. VID's operational procedure is to use its surface water supply when available and conserve its groundwater for dry years when run-off is minimal and surface supplies are reduced.

In dry years, groundwater is pumped from the well field into Lake Henshaw and released from the lake as needed. In wet years, the surface water supply is used and pumping operations cease, permitting the basin to recharge and groundwater levels to rise. Thus, the groundwater basin can act as a water bank, allowing deposits in wet years and withdrawals in dry years.

Groundwater Program

VID does not participate in any groundwater storage or replenishment programs (other than percolation of natural rainfall and run-off) due to the remote location of the Warner Basin relative to imported water conveyance facilities. However, as described in the above section, VID's management of the Warner Basin ensures that groundwater is available as a supplemental supply source during dry periods.

In September 2014, the Sustainable Groundwater Management Act (SGMA) was signed into law. The law provides new tools and authorities for local agencies to manage groundwater resources within their jurisdiction to achieve a sustainable use of those resources within a 20-year implementation period. While SGMA provides specific mandates only for those groundwater basins deemed by the State to be "medium" or "high" priority groundwater basins, the law encourages the formation of "Groundwater Sustainability Agencies" (GSAs) and the preparation of "Groundwater Sustainability Plans" (GSPs) for all groundwater basins, even those deemed "low" and "very low" priority basins.

DWR has classified the Warner Basin as a "very low" priority basin. Nevertheless, the Warner Basin represents a significant water source for VID. VID continues to investigate groundwater resources in the Warner Basin and consider whether forming a Warner Valley GSA is in the best interest of VID and its customers.

Water Conservation Program

VID started its water conservation program in 1981. As drought gripped California in the early 1990's, water purveyors, including VID, increased their water conservation efforts to reduce demand. Over the years, these programs have been successful in managing water demand as populations grew.

VID's population served has increased by 35% from 1990 to 2015 (94,526 to 127,699). However, water received for delivery to its customers has remained relatively constant. Water received for delivery has averaged 21,051 acre-feet per year (AF/YR) over this period which is slightly less than water received for delivery in 1990 (22,530 AF/YR).

VID and other member agencies partnered with the Metropolitan and/or Water Authority to offer conservation programs to their customers in the early 1990's. Since that time, the Water Authority and its member agencies have jointly funded programs (public education and financial incentives) that benefit the region as a whole. Examples include residential, commercial, industrial and institutional voucher/rebate programs, water surveys, professional and homeowner landscape classes, and landscape assistance programs.

Recycled Water Program

Wastewater collection, treatment and disposal services within VID's boundaries are provided by the City of Vista (City) and Vallecitos Water District. VID is the distributor of recycled water produced by the City of Vista (Buena Sanitation District) at the Shadowridge Water Reclamation Plant (SWRP). VID distributed up to 300 acre-feet (AF) per year of recycled water to the Shadowridge Golf Course when the SWRP was operational.

The City suspended operation of the SWRP in December 2003 due to high production costs. In 2009, the City, with assistance from the Water Authority and VID, initiated work to determine the feasibility of re-commissioning the SWRP. The study was completed, and a copy was provided to North County Regional Recycled Water Group (now called the North San Diego Water Reuse Coalition), formed to evaluate the potential for a regional recycled water project in north San Diego County.

The North San Diego Water Reuse Coalition, comprised of water and wastewater agencies, including VID, has completed a recycled water projects study for north San Diego County. The study is being used for short and long term planning purposes as well as a basis to apply for state and federal financial assistance (e.g. grants, loans, etc.). While the SWRP recommissioning project was included as part of the study, it was considered a long term project option, and the District does not anticipate the project moving forward during the period covered by the 2015 Plan.

CHAPTER 2 PLAN PREPARATION

2.1 BASIS FOR PREPARING A PLAN

The Act requires every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually to prepare and adopt, in accordance with prescribed requirements, an urban water management plan. The Act requires each urban water supplier to prepare a plan that describes and evaluates reasonable and practical water uses, recycled water and conservation activities. These plans must be filed with DWR at least once every five years, or before December 31, in years ending in five and zero.[1]

As defined in the Act, VID is an urban water supplier as it provides water for municipal purposes to more than 3,000 customers and supplies more than 3,000 AF annually. In 2015, VID served 28,649 municipal connections and supplied 17,833 AF of water to its customers.

2.2 PLANNING AND COMPLIANCE

VID's 2015 Plan reports solely on its service area and it is not part of a regional alliance for the purpose of achieving SBX 7-7 targets. However, VID does rely on plans submitted by its wholesalers, the Water Authority and Metropolitan, to provide details on imported supplies necessary to meet future demands within its service area. Coordination with said agencies is discussed below and reflected in information contained in the 2015 Plan.

2.3 FISCAL YEAR AND UNITS OF MEASURE

VID is reporting as a retailer, on a fiscal year basis (beginning July 1 and ending June 30) and using acre-feet (AF) as its unit of measure.

2.4 COORDINATION AND OUTREACH

2.4.1 Wholesale and Retail Coordination

To adequately demonstrate VID's water supply reliability over the next 25 years, the 2015 Plan quantifies existing and projected local and imported supplies necessary to meet future retail demands within VID's service area. While the 2015 Plan includes specific information on VID's supplies, the plans submitted by its wholesalers, Water Authority and Metropolitan, will provide details on their supplies that contribute to the reliability of supplies for VID.

Reasonable consistency among the plans of water wholesalers, Metropolitan and Water Authority, and their member agencies' plans is important to accurately identify the projected supplies available to meet regional demands. Over the past year, VID staff has actively participated in member agency work group meetings coordinated by the Water Authority. VID staff, along with the other member

[1] Assembly Bill 2067 (2014) requires each urban water supplier to submit its 2015 UWMP to DWR by July 1, 2016.

agencies' personnel, have reviewed and provided input on data that was used to update Water Authority's 2015 Plan. VID has also been given the opportunity to provide input on Water Authority's draft 2015 Plan during various stages of its development. The coordination efforts ensured that the region's and member agencies' plans were developed using the most up to date information available, making the documents a solid basis for regional and local water management planning.

2.4.2 Coordination with Other Agencies and the Community

VID coordinated the preparation of its 2015 Plan with appropriate local agencies, including other water suppliers and relevant public agencies, to the extent practicable. In accordance with the Act, VID notified cities and the county within its service area sixty (60) days prior to the public hearing that it was preparing a 2015 Plan. The draft 2015 Plan was made available for public review on VID's website and in hardcopy at its office. Copies of the draft 2015 Plan (on CD) were sent to agencies listed in Table 2-1 as well as the Vista Chamber of Commerce and South Vista Communities (a non-profit community organization). Please refer to Table 2-1 for additional information on VID's coordination process.

TABLE 2-1: COORDINATION WITH OTHER AGENCIES

Agencies	Participated in UWMP Development	Commented on the Draft	Attended Public Meetings	Contacted for Assistance	Received Copy of the Draft	Sent Notice of Intention to Adopt	Not Involved/ No Information
Metropolitan Water District of Southern California					✓	✓	
San Diego County Water Authority	✓			✓	✓	✓	
City of Vista	✓			✓	✓	✓	
City of Escondido					✓	✓	
City of Oceanside					✓	✓	
City of San Marcos					✓	✓	
County of San Diego					✓	✓	
Encina Wastewater Authority					✓	✓	
State Water Resources Control Board, District 14					✓	✓	
Vista Unified School District					✓	✓	

2.5 DWR CHECKLIST, STANDARDIZED TABLES AND SBX 7-7 VERIFICATION FORM

DWR prepared a checklist of items based on the Act that must be addressed in an agency's plan. This checklist allows an agency to identify where in its plan it has addressed each item. VID has completed the checklist, referencing the sections and page numbers included in the 2015 Plan. The completed checklist along with required standardized tables and SBX 7-7 verification form are included in Appendix C.

CHAPTER 3 SYSTEM DESCRIPTION

3.1 FORMATION AND PURPOSE

VID was formed in 1923 pursuant to Section 20500, et. seq., of the California Water Code. VID, through the Bueno Colorado Municipal Water District, joined Water Authority and Metropolitan in 1954 to acquire the right to purchase and distribute imported water throughout its service area. On November 23, 1993, the Bueno Colorado Municipal Water District was dissolved and reorganized into VID. VID then became a member agency of the Water Authority.

3.2 SERVICE AREA

VID covers an area of approximately 21,200 acres as shown on Figure 3-1. The service area includes the city of Vista and portions of Escondido, Oceanside, and San Marcos, and unincorporated areas of San Diego County. VID is responsible for the operation and maintenance of all its water supply and distribution facilities.

All water delivered by VID is filtered and includes imported water purchased from Water Authority and local water from VID's Lake Henshaw facilities. VID has major storage and water treatment facilities. Groundwater at Lake Henshaw is used to supplement the local water supply whenever surface runoff is insufficient to produce adequate supplies of local water. Wastewater collection, transmission, treatment and disposal services to developed areas within VID boundaries are provided by other agencies not associated with VID.

3.3 RELATIONSHIP TO OTHER WATER AGENCIES

Bueno Colorado Municipal Water District

The Bueno Colorado Municipal Water District was formed in 1954 and generally encompassed those lands that today make up the Vista Irrigation District and the Vallecitos Water District (formerly the San Marcos County Water District). Bueno Colorado was formed primarily to act as the member agency of Water Authority and to wholesale water to VID and the Vallecitos Water District.

In 1980, the Vallecitos Water District detached from Bueno Colorado Municipal Water District, leaving only VID and several non-coterminous parcels inside the resulting Bueno Colorado Municipal Water District. Bueno Colorado Municipal Water District neither owned nor operated any water facilities. On November 23, 1993, the Bueno Colorado Municipal Water District was officially dissolved and VID took over all of the remaining rights and responsibilities of the agency. All property within Bueno Colorado Municipal Water District was annexed to either VID or an appropriate adjacent water service agency.

San Diego County Water Authority

The Water Authority was organized on June 9, 1944, under the County Water Authority Act for the express purpose of importing Colorado River water into San Diego County.

Imported water, now a combination of Colorado River Water and State Project Water (SWP), is sold wholesale to the 24 member agencies of Water Authority. The member agencies are autonomous, and their city councils or boards of directors set local policies and water pricing structures. Each member agency may appoint at least one representative (based on assessed valuation) to the Board of Directors of Water Authority.

VID is one of 24 member agencies of Water Authority. Member agency status entitles VID to directly purchase water for its needs from Water Authority to ensure, to the best of its ability, that adequate amounts of water will be available to satisfy future water requirements. A map of the Water Authority service area, which also shows the position of VID within Water Authority's boundaries, is included as Figure 3-2.

A majority of the water distributed by Water Authority is purchased from the Metropolitan and is delivered into Water Authority pipelines from Metropolitan facilities located just south of the San Diego County/Riverside County boundary. Water Authority annexed to Metropolitan in 1946 and is now represented on the Metropolitan Board by four directors. Water Authority is the largest of the 26 member agencies of Metropolitan and currently purchases approximately 29% of the total Metropolitan water supply.

Metropolitan Water District of Southern California

Metropolitan was created by a vote of the people in 1928 following the passage of the Metropolitan Water District Act by the California Legislature to provide supplemental water for cities and communities on the south coastal plain of California.

Since its formation, Metropolitan, a water wholesaler, has grown to include 26 member agencies (including Water Authority), as shown on Figure 3-3, and currently covers an area which includes all or portions of Ventura, Los Angeles, Orange, Riverside, San Bernardino and San Diego counties. Metropolitan supplies water to an estimated 19.1 million people within its service area.

FIGURE 3-1: VISTA IRRIGATION DISTRICT SERVICE AREA MAP

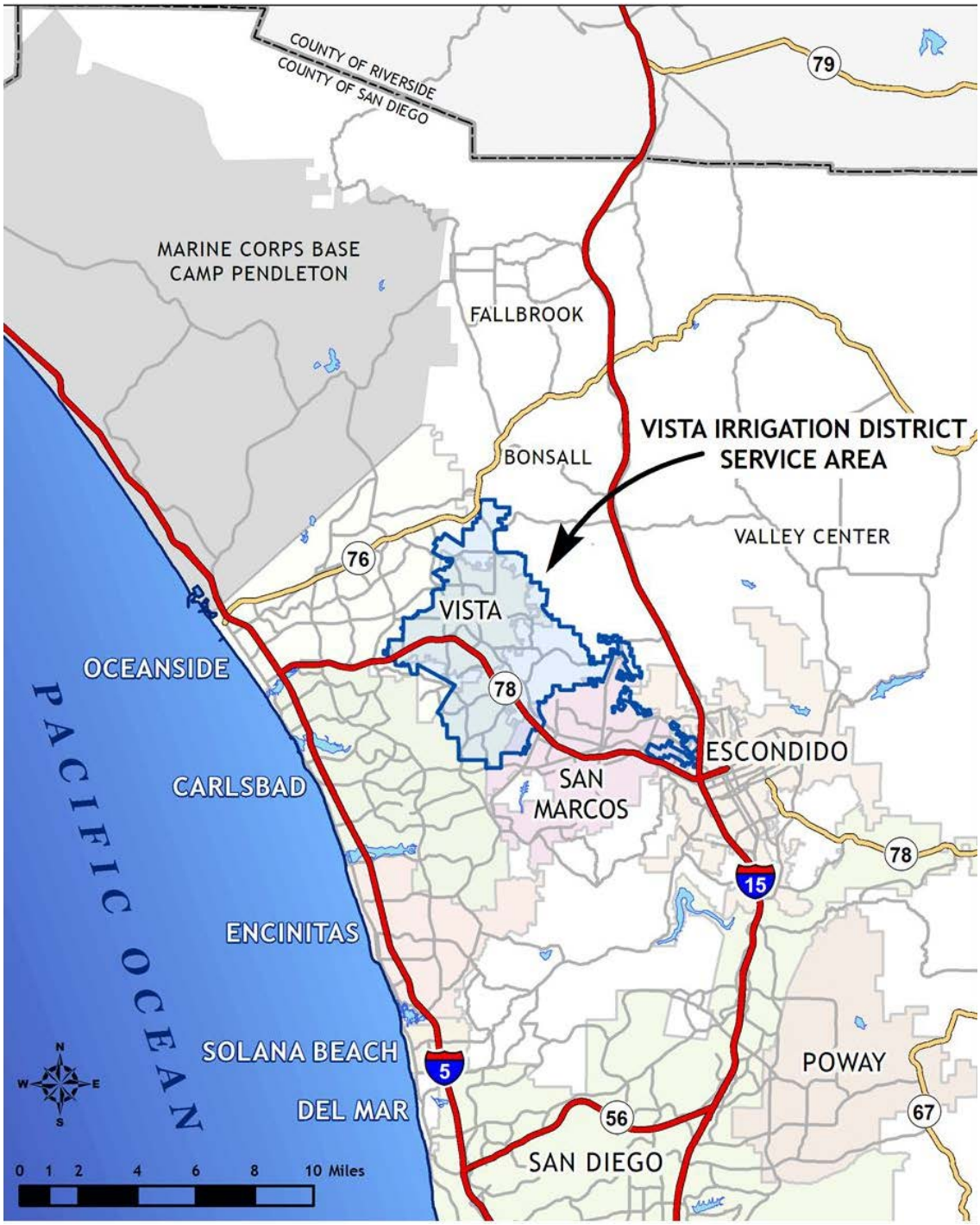


FIGURE 3-2: SAN DIEGO COUNTY WATER AUTHORITY SERVICE AREA MAP

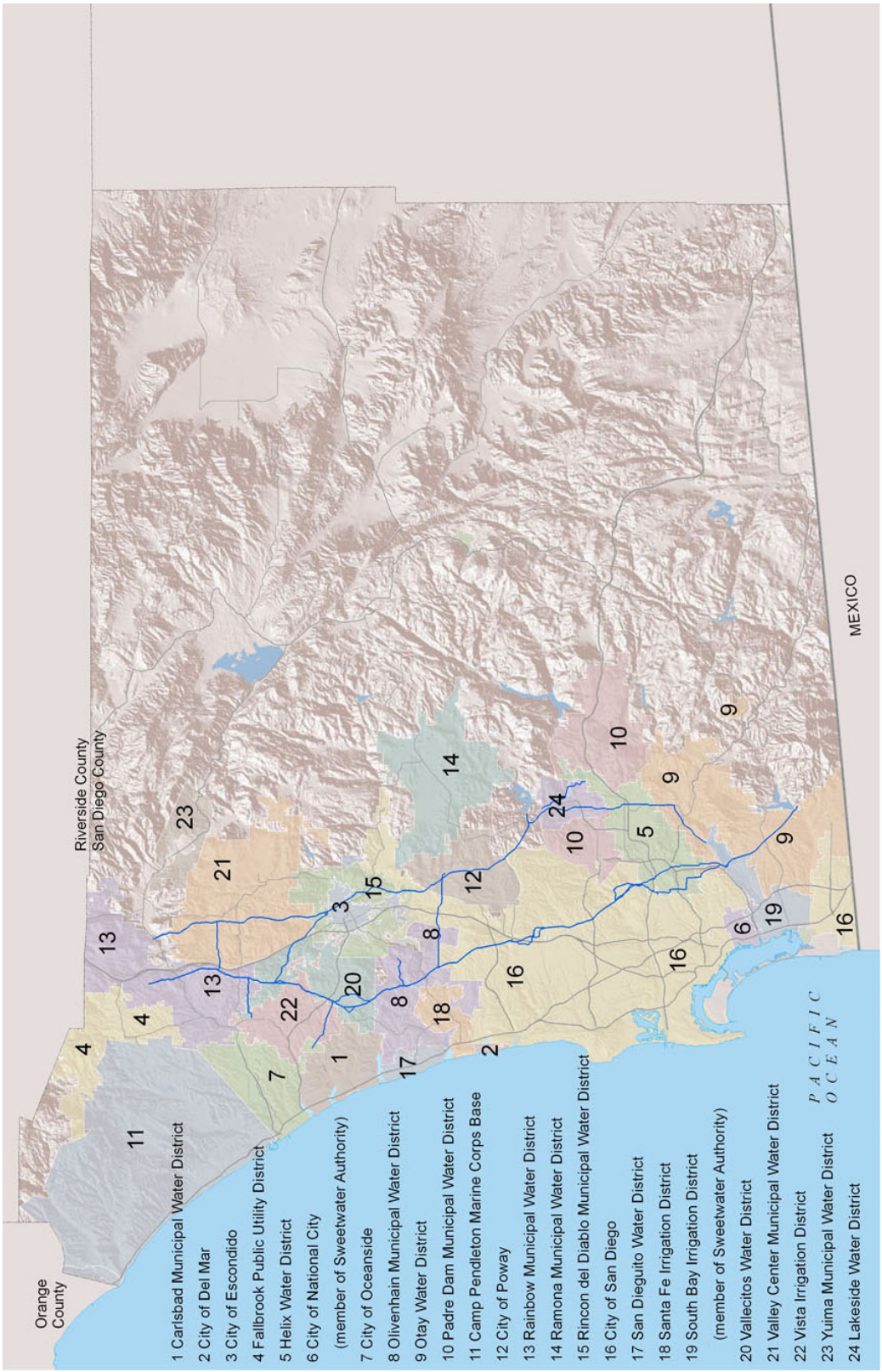
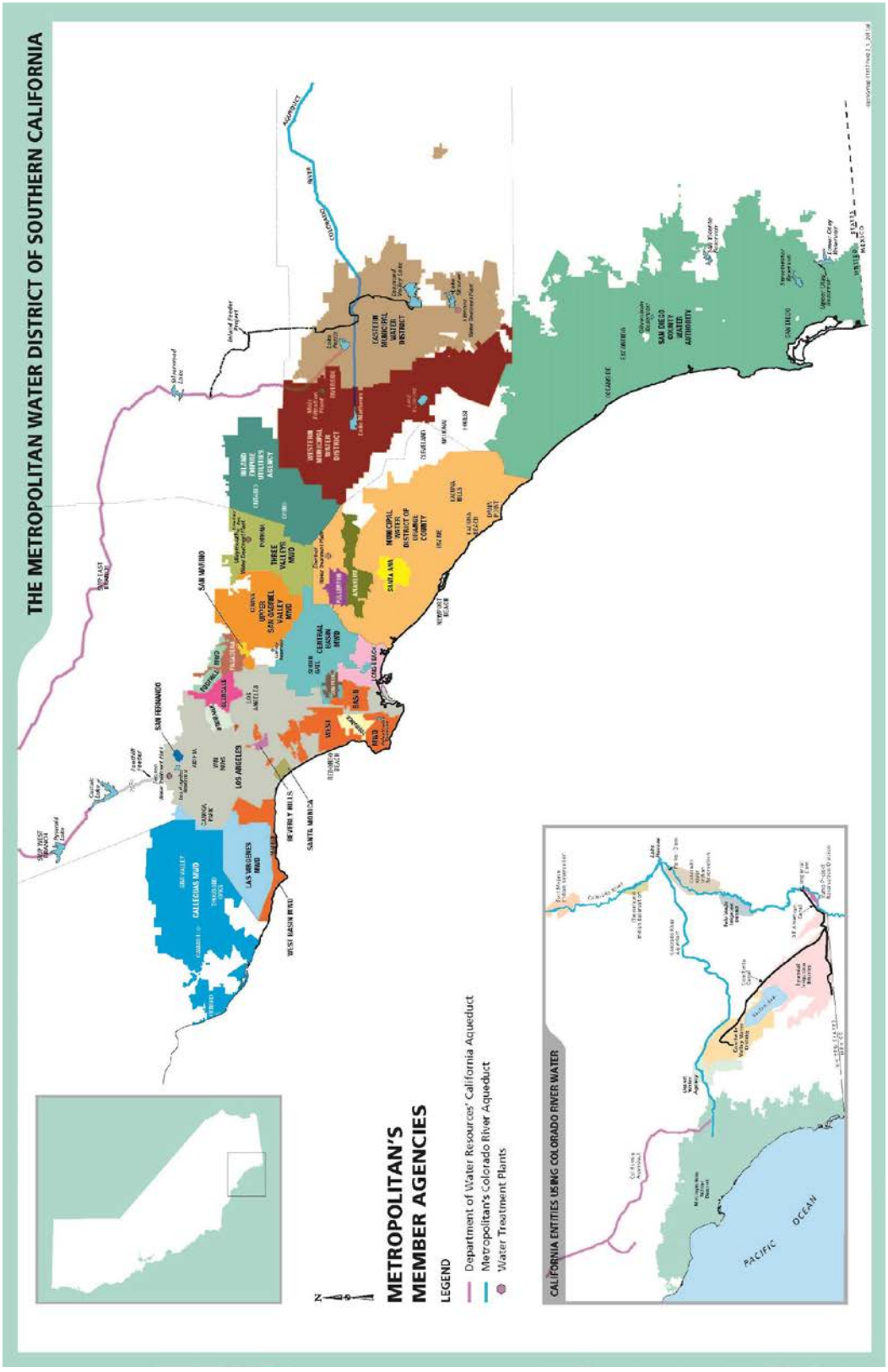


FIGURE 3-3: METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA SERVICE AREA MAP



3.4 POPULATION

According to the SANDAG Series 13 Growth Forecast, the region's population will grow at a steady rate. Based on projections presented in SANDAG's Series 13 Growth Forecast, the population in VID's service area is expected to increase from 127,699 in 2015 to 158,627 by 2040, a 24% increase. Table 3-1 shows the population projections for VID from 2015 to 2040.

TABLE 3-1: POPULATION – CURRENT AND PROJECTED

	2015	2020	2025	2030	2035	2040
Service Area Population	127,699	129,618	137,042	147,504	150,202	158,627

3.5 CLIMATE

Climatic conditions within the service area are characteristically Mediterranean with mild temperatures year round. More than 80% of the region's rainfall occurs in the period between November through March. Average annual rainfall in Vista is approximately 13 inches per year. At Lake Henshaw, which is 25 miles inland from VID's service area and the local source of 30% of VID's water supply, the average annual rainfall is about 25 inches per year. Table 3-2 contains detailed information regarding the climate for VID's service area and local water supply.

TABLE 3-2: CLIMATE

	Jan	Feb	Mar	Apr	May	Jun
Standard Monthly ETo	2.44	2.54	4.78	5.36	4.60	6.24
Average Rainfall (Inches) Vista	2.76	2.55	2.24	1.05	0.22	0.11
Average Rainfall (Inches) Lake Henshaw	4.90	4.86	4.48	1.98	0.57	0.10
Average Maximum Temperature (Fahrenheit) Vista	67.4	67.8	68.2	70.8	72.9	76.3
Average Minimum Temperature (Fahrenheit) Vista	44.0	45.0	46.3	48.5	53.5	56.6
Average Maximum Temperature (Fahrenheit) Lake Henshaw	59.9	61.5	63.7	68.5	74.5	83.7
Average Minimum Temperature (Fahrenheit) Vista	29.4	31.4	34.0	37.2	41.8	45.8

TABLE 3-2: CLIMATE (Continued)

	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Standard Monthly ET_0	5.95	6.17	5.04	3.74	2.94	2.00	51.80
Average Rainfall (Inches) Vista	0.06	0.07	0.25	0.54	1.40	1.83	13.09
Average Rainfall (Inches) Lake Henshaw	0.27	0.49	0.45	0.91	2.34	3.64	24.99
Average Maximum Temperature (Fahrenheit) Vista	81.3	83.0	82.2	77.9	72.3	67.4	74.0
Average Minimum Temperature (Fahrenheit) Vista	60.3	61.6	60.0	55.0	48.3	44.0	51.9
Average Maximum Temperature (Fahrenheit) Lake Henshaw	92.3	92.8	88.6	78.7	68.0	61.0	74.4
Average Minimum Temperature (Fahrenheit) Lake Henshaw	52.5	52.9	47.8	39.9	33.0	28.9	39.5

Sources: California Irrigation Management Information System (CIMIS), Station 153
Western Regional Climate Center, Vista (049378) and Henshaw Dam (043914)

3.6 WATER USE AND DEMOGRAPHIC TRENDS

Table 3-3 shows historical water received and sold on a fiscal year (FY) basis in VID's service area. Water demands decreased from around 20,000 AF in FY 1990-91 to just over 17,700 AF in FY 1991-92. This decrease was attributable to a number of factors, including lingering drought impacts and the implementation of aggressive water conservation measures. Since that time, water demands have remained relatively constant, taking into consideration weather, water supply conditions and population growth.

Of the 17,117 AF of water used in FY 2014-15, 16,163 AF were used for municipal and industrial (M&I) purposes and 954 AF for agricultural purposes. The relative share of M&I water use to total water use has been increasing over time as agricultural water use has declined due to urbanization. Agricultural water use accounted for 14% of the water use in FY 1990-91, 11% in 2000-01, 6% in FY 2010-11 and FY 2014-15.

TABLE 3-3: HISTORICAL WATER SUPPLY SOURCES AND SALES

Fiscal Year	Water Received			Water Sales		
	Local[1]	Imported[2]	Total	M&I	Agricultural	Total[3]
1990-91	4,755	15,249	20,004	16,584	2,596	19,180
1991-92	4,057	13,666	17,723	14,708	1,828	16,536
1992-93	9,901	8,851	18,752	15,784	1,873	17,657
1993-94	13,560	5,458	19,018	15,965	1,643	17,608
1994-95	11,513	7,322	18,835	15,780	1,563	17,343
1995-96	13,378	8,251	21,629	17,765	1,892	19,657
1996-97	9,659	12,108	21,767	18,747	1,953	20,700
1997-98	7,649	11,708	19,357	17,504	1,741	19,245
1998-99	14,001	7,476	21,477	17,280	1,965	19,245
1999-00	6,804	17,123	23,927	20,758	2,192	22,950
2000-01	4,664	17,556	22,220	19,370	2,408	21,778
2001-02	4,026	19,756	23,782	19,654	2,573	22,227
2002-03	1,578	21,192	22,770	19,665	2,226	21,891
2003-04	1,003	23,776	24,779	20,683	2,478	23,161
2004-05	1,170	21,229	22,399	19,119	1,859	20,978
2005-06	9,856	13,493	23,349	20,320	1,565	21,885
2006-07	5,062	18,968	24,030	21,191	1,637	22,828
2007-08	2,245	21,280	23,525	20,792	1,570	22,362
2008-09	6,296	15,668	21,964	19,746	1,120	20,866
2009-10	3,899	15,336	19,235	17,201	1,072	18,273
2010-11	7,097	10,819	17,916	16,595	995	17,590
2011-12	6,547	12,354	18,901	16,303	938	17,241
2012-13	2,092	17,398	19,481	17,837	1,031	18,904
2013-14	1,695	18,439	20,134	18,053	1,075	19,128
2014-15	1,618	16,215	17,833	16,163	954	17,117

[1]Local water is from Lake Henshaw (natural run-off and groundwater pumping).
[2]Imported water purchased from the San Diego County Water Authority.
[3]Total does not include unaccounted for water (e.g. system losses, fire suppression, etc.).

CHAPTER 4 SYSTEM WATER USE

Water use in VID's service area falls into two classes of service, municipal and industrial (residential and non-residential) and agriculture. Municipal and industrial uses currently constitute about 90 to 95 percent of VID's water consumption. The remaining percentage has historically been attributable to agricultural water use, primarily for irrigation of groves and nurseries. This Chapter describes VID's current and projected water use.

4.1 PROJECTED WATER USE

Table 4-1 shows total projected water use for VID's service area through 2040. The projected water use is based on and is consistent with the Water Authority's demand forecast for VID. As stated in the Water Authority's 2015 Plan, SANDAG's 2050 Regional Growth Forecast was used to forecast water demands ensuring there is a link between local jurisdictions' general plans and projected water demands.

4.2 WATER USE BY SECTOR: CURRENT AND PROJECTED

Current and projected demands (from 2015 through 2040) within VID's service area by water use sector are shown in Tables 4-1. All demands shown in the table below are potable water demands.

TABLE 4-1: CURRENT AND PROJECTED WATER DEMANDS BY USE SECTOR

Water Use Sector	2015	2020	2025	2030	2035	2040
Single Family	8,701	9,910	10,785	11,514	11,892	12,315
Multi-Family	2,822	3,159	3,411	3,621	3,742	3,949
Mobile Home	378	378	378	378	378	378
Commercial	1,237	1,351	1,475	1,579	1,632	1,690
Industrial	629	748	835	900	933	966
Institutional/Governmental	441	560	622	674	700	724
Irrigation	1,955	2,108	2,310	2,478	2,565	2,656
Agricultural[1]	954	934	878	824	796	768
Water Loss[2]	606	596	626	661	679	701
Other[3]	110	-	-	-	-	-
TOTAL	17,833	19,744	21,320	22,629	23,317	24,147

[1]Agricultural irrigation includes single accounts that provide water for agricultural as well as domestic use. All accounts and deliveries for agricultural-domestic use are assigned to this sector.

[2]Water loss figures derived from American Water Works Association (AWWA) worksheet, Appendix L.

[3]Estimate of water consumed but not yet billed to customers (related to timing of billing at the end of fiscal year).

4.2.1 Residential Water Use

Although single-family homes account for just over 60% of the total occupied housing stock, they account for about 74% (on average) of total residential water demands. This variation occurs because single-family households tend to use more water than households living in multi-family structures on a per unit basis. Single-family households tend to have more people living in the household and more landscaping per home. They also are more likely to have water-saving fixtures and appliances in the home.

4.2.2 Non-residential Use

Commercial, industrial and institutional water use, including irrigation, accounts for about 28% of the total water demands within VID. The commercial sector has a complex mix of customers ranging from markets, restaurants and antique stores to multi-story office buildings and regional shopping centers. The industrial sector is primarily centered on light manufacturing. VID has a stable institutional and governmental sector consisting of local government, schools and a public hospital.

4.2.3 Agricultural Use

Climatic conditions within VID's service area, which are traditionally Mediterranean with mild temperatures year round, provide an ideal climate to grow a number of crops. The primary crops grown are avocados, citrus and nursery products. Some livestock and local fresh market crops are produced within VID's service area. Agricultural water use (as a percentage of the total water use) is projected to gradually decrease over the next twenty to thirty years due to urbanization.

4.2.4 Sales, Transfers and Exchanges to Other Agencies

VID does not sell water to other agencies. As noted previously, VID maintains distribution inter-ties with its neighboring water agencies. During local water supply interruptions, whether planned due to maintenance or unplanned due to an emergency, the agencies cooperatively transfer water between them for distribution to affected customers.

4.3 DISTRIBUTION SYSTEMS WATER LOSSES

For the most recent twelve month period, unaccounted for water loss totaled 606 AF based on the calculation from AWWA worksheet (included as part of Appendix C). Table 4-1 shows unaccounted for water loss for the most recent twelve (12) month period as well as projected water loss in future years based on the calculated percentage (about 3 percent) from the AWWA worksheet. Unaccounted for water loss may be associated, with distribution system losses, theft, etc.

4.4 ESTIMATED FUTURE WATER SAVINGS

The Act allows urban water suppliers to account for water savings estimates in their projected water demands. Based on DWR's 2015 Plan Guidebook, the Water Authority developed estimated water savings (passive and active which are described in more detail below) for each of its member agencies, including VID, using the Alliance for Water Efficiency Water Conservation Tracking Tool. VID has incorporated estimated water savings shown in Table 4-2 in its projected future demands.

This Alliance for Water Efficiency Water Conservation Tracking Tool provides estimates of existing and future "passive" or code-based water savings and "active" savings resulting from the implementation of demand management programs.

Passive conservation savings are based on appliance standards, plumbing code changes, and conversion of active savings to passive as the useful life of devices are reached. Estimated savings from the 2015 Model Water Efficient Landscape Ordinance are included in this category. Compliance from new residential development was set at 80 percent, and a majority of this savings was assumed to continue over the Plan's 2040 planning horizon. Additionally, passive conservation also includes savings from landscape conversions at existing single family homes.

Active conservation savings are derived from conservation programs and activities implemented within the Water Authority service area. Active conservation activities (such as indoor and outdoor incentives, landscape classes, and irrigation checkups) are tracked in the Alliance for Water Efficiency Water Conservation Tracking Tool and are based on VID's participation. Water savings from these activities are calculated using water efficiency estimates, by activity type, contained in the standardized Alliance for Water Efficiency Water Conservation Tracking Tool Library. Future active conservation is set at the 2015 level of participation in program offerings and estimated savings for each year over the planning horizon, excluding the recent large-scale turf replacement program.

TABLE 4-2: ESTIMATED FUTURE WATER SAVINGS

	2020	2025	2030	2035	2040
Estimated Savings	3,100	3,781	3,928	4,186	4,443

4.5 WATER USE FOR LOWER INCOME HOUSEHOLDS

As required by the Act, VID has included water use projections for low income households as defined by the Act. VID provides water service in the City of Vista and portions of the cities of Escondido, Oceanside, San Marcos and unincorporated area of the County of San Diego. Therefore, SANDAG's regional housing needs assessment was used to calculate projected low income household water needs based upon the area served by VID in each jurisdiction. Using SANDAG's assessment, VID estimates that an additional 1,010 low income housing units are needed in its service area by 2020. The estimated residential per unit water demand is .28 acre-feet/unit/year; therefore, 283 acre-feet/year is needed to supply these projected lower income housing units.

Water demands for these units are included in future water demand projections for single and multi-family homes listed in Table 4-1.

4.6 CLIMATE CHANGE

At this time, the evaluation of potential climate change impacts on water demands is optional under the Act. VID did not analyze the impacts of climate change on future water demands. However, the Water Authority did evaluate several climate change scenarios and their impacts on demands in the San Diego region, the findings of which are applicable to VID's service area.

The Water Authority's 2015 Plan notes there were no dramatic shifts in seasonal patterns of precipitation and average maximum daily temperature for the San Diego area when running various scenarios. On average, precipitation tends to be more concentrated in the winter with lesser amounts of precipitation occurring in the spring and fall. Additionally, more significant water demand impacts associated with the forecasted trend toward warmer and drier climate conditions may occur beyond 2040. More details regarding the Water Authority's evaluation can be found in its 2015 Plan.

CHAPTER 5 BASELINE AND TARGETS

5.1 BASELINE DAILY PER CAPITA WATER USE

SBX 7-7 was enacted to require retail urban water agencies within the state to achieve a 20 percent reduction in urban per capita water use by December 31, 2020 (referred to as "20 X 2020") and interim savings of 10 percent by 2015. As required by Water Code § 10608.2, this subsection includes VID's 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 basis for determining those estimates, including references to supporting data. VID's baseline and target daily per capita water use figures were developed individually, and in accordance with Methodologies for Calculating Baseline and Compliance Per Capita Water Use developed by DWR. A copy of the Methodologies for Calculating Baseline and Compliance Per Capita Water Use is included in Appendix A.

5.1.1 Ten-Year Baseline Period

Since VID did not deliver any recycled water in 2008, its baseline per capita water use is based on gross average water use over a continuous 10-year period beginning June 1, 1995 and ending June 30, 2005. Water Authority's invoices and Escondido-VID Treatment Plant monthly reports for fiscal years 1996 through 2005 were used to derive total water deliveries. The population estimates for fiscal years 1996 through 2005 are based on data from SANDAG.

Table 5-1 shows VID's base period ranges. Table 5-2 shows the calculations of VID's baseline daily per capita water use figure. The baseline daily per capita water use for VID is 175 gallons per capita per day (GPCD).

TABLE 5-1: BASE PERIOD RANGES

Base	Parameter	Value	Units
	2008 Water Deliveries	23,525	AF
	2008 Total Volume of Recycled Water Delivered	0	AF
10- to 15-Year Base Period	2008 Recycled Water as a Percent of Total Deliveries	0	Percent
	Number of Years in Base Period	10	Years
	Year Beginning Base Period Range	1996	
	Year Ending Base Period Range	2005	
	Number of Years in Base Period	5	Years
5-year Base Period	Year Beginning Base Period Range	2004	
	Year Ending Base Period Range	2008	

TABLE 5-2: BASELINE DAILY PER CAPITA WATER USE – 10-YEAR GPCD

Sequence Year	Year	Gross Water Use (AF)	Population	GPCD
1	1996	21,629	105,399	183
2	1997	21,767	107,415	181
3	1998	19,357	109,470	158
4	1999	21,477	111,564	172
5	2000	23,927	113,704	188
6	2001	22,220	117,535	169
7	2002	23,783	118,568	179
8	2003	22,770	119,750	170
9	2004	24,779	120,258	184
10	2005	22,398	120,053	167
		10-Year GPCD		**175**

5.1.2 Five-Year Baseline Period

As required by state law, VID is required to confirm that its target is no less than 5 percent of the baseline daily per capita water use. To confirm its compliance with this requirement, VID must calculate its gross average water use, reported in gallons per capita per day, over a continuous 5-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

VID's 5-year baseline per capita water use is based on gross average water use over a continuous 5-year period beginning June 1, 2003 and ending June 30, 2008. The data sources referenced in the calculation of the 10-year baseline per capita water use (Water Authority invoices, Escondido-VID Water Treatment Plant monthly reports and SANDAG population estimates) were also used to calculate the 5-year baseline per capita water use. Table 5-3 shows the 5-year baseline period.

TABLE 5-3: BASELINE DAILY PER CAPITA WATER USE – 5-YEAR GPCD

Sequence Year	Year	Gross Water Use (AF)	Population	GPCD
1	2004	24,779	120,258	184
2	2005	22,398	120,053	167
3	2006	23,349	120,207	173
4	2007	24,030	120,443	178
5	2008	23,525	121,491	173
		5-Year GPCD		**175**
		95% of 5-Year GPCD		**166**

5.1.3 Urban Water Use Target

According to SBX 7-7, urban water suppliers must set a year 2020 "urban water use target" and a year 2015 "interim water use target" using one of four methods: (1) 80 Percent of Baseline Water Use; (2) Sum of Performance Standards Applied to Water Use Categories; (3) 95 Percent of the State Hydrologic Region Target (142 GPCD for the South Coast Region); or (4) Savings by Water Use Type. Each of the methods is described 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.

Method 2 – Performance Standards Applied to Water Use Categories: Method 2 calculates a target by summing performance standards applied to indoor residential, landscaped, and commercial, industrial, and institutional (CII) water use. The indoor residential target is set at 55 GPCD. The CII target is a 10 percent reduction in use. The landscaped water use target is set using standards of the Model Ordinance as set forth in Chapter 2.7 of Division 2 of Title 23 of the State of California Code of Regulations. This requires estimating the landscaped area for each parcel in the service area. This can be accomplished with field measurements, landscape plans, remote sensing, aerial or satellite imaging, or, for parcels less than one-half acre in size, a sampling of a group of similar parcels can be applied to the group.

Method 3 - 95 Percent of the State Hydrologic Region Target: These regional targets are contained in DWR's "20x2020 Water Conservation Plan" dated February 2010. DWR divides the state into ten hydrologic regions and San Diego County falls within Region 4, "South Coast." DWR calculated a 2005 baseline for the region of 180 GPCD; with a 20 percent reduction, the target would be 144 GPCD. DWR's statewide target was calculated at 154 GPCD. Considering the region's variance from the statewide target, and extra savings accumulated from 29 high performing regions (Regions 1-3), DWR assigned Region 4 a target of 149 GPCD, a 5 GPCD reduction from the state target of 154 GPCD. Based on Method 3, the Region 4 target is then ninety-five percent of the 149, or 142 GPCD.

Method 4 – Savings by Water Use Type: In Urban Water Use Target Method 4 (hereinafter, "Method 4"), DWR breaks the potential savings into four categories, 1) Indoor Residential, 2) Metering, 3) Commercial, Industrial, and Institutional (CII), and 4) Landscaping plus Water Loss. Indoor residential savings can be calculated by tabulating the number of water-efficient toilets, showerheads, and washers that have been installed in the supplier's service area, estimating the percent saturation, and the water use savings. As an alternative, the indoor savings can be set at a default value of 15 GPCD. Metering savings address those agencies that have unmetered connections, which generally does not apply in the Water Authority's service area. A reduction of 10 percent is applied to CII use. 20 percent is applied to landscape and water loss. Because landscaping water use is difficult to estimate, DWR calculates a combined landscape and water loss value as follows:

The Baseline is: 70 GPCD (indoor per capita water use) - CII water use in GPCD= Landscape/Water Loss. The target is then: Baseline - Indoor Residential Savings - Metering Savings - CII Reduction - Landscape/Water Loss Reduction = Target. This target must be less than the 5-year baseline value.

VID selected Method 3 as its reporting method for complying with SBX 7-7. Method 3 was adopted as part of the public hearing process for VID's draft 2015 Plan. Method 3 was utilized for purposes of determining VID's interim and urban water use targets.

Since the SBX 7-7 target (142 GPCD) is less than 95% of the 5-year GPCD (166 GPCD), no adjustment to the SBX 7-7 target is required.

5.1.4 Interim Water Use Target

VID's interim water use target for 2015 is 158 GPCD. Table 5-4 shows VID's base period ranges as well the 2015 Interim Target (and Confirmed 2020 Target).

TABLE 5-4: BASELINES AND TARGETS SUMMARY

Baseline Period	Start Year	End Year	Average GPCD	2015 Interim Target	Confirmed Target
10 Year	1996	2005	175	158	142
5 Year	2004	2008	175	-	-

5.2 2015 COMPLIANCE DAILY PER CAPITA WATER USE

VID's actual GPCD for 2015 is 125, which is 32 GPCD under its 2015 Interim Target. As shown in Table 5-5, VID achieved its targeted reduction for 2015 and is in compliance with SBX 7-7.

TABLE 5-5: 2015 COMPLIANCE

Year	Gross Water Use (AF)	Population	GPCD
2015	17,833	127,699	125
2015 Interim Target			**158**

5.3 WATER USE REDUCTION PLAN

In an effort to meet its water use reduction goals, VID plans to implement the water conservation programs and policies presented in Chapter 9, Demand Management Measures. Over the next five years, VID will periodically assess trends in per capita water use and evaluate its programs/policies to ensure the attainment of the 2020 target.

5.4 POTENTIAL ECONOMIC IMPACTS

VID's current urban per capita water use is below its SBX 7-7 targets for 2015 and 2020. VID will continue to implement the water conservation programs and policies described in Chapter 9, Demand Management Measures, to attempt to maintain customer consumption levels that achieve SBX 7-7 targets. At this time, it is not anticipated that new water conservation program expenses will need to be made to meet SBX 7-7 targets.

VID has experienced reduced water sales as a result of the current conservation efforts of its customers. The fiscal impact over the period covered by this plan will vary based on the level of conservation achieved and the rate at which operating expenses and capital outlay funded by this revenue source escalate. At this time, it is not anticipated that a water rate adjustment will be needed to comply with SBX 7-7.

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CHAPTER 6 SYSTEM SUPPLIES

VID currently has a several water sources including imported water, local surface water and groundwater. However, due to limitations on the latter two sources, the Water Authority, which is the source of purchased water, will provide a growing percentage of VID's supply to meet future water demands. The Water Authority, in turn, currently purchases about half of its water from Metropolitan, but is pursuing projects to diversify its supplies. Due to VID's reliance on these two agencies, this Plan includes information on the current and planned water supplies of Metropolitan and Water Authority.

VID is a public agency member of the Water Authority. The Water Authority is a public agency member of Metropolitan. The statutory relationships between the Water Authority and its member agencies, and Metropolitan and its member agencies, respectively, establish the scope of VID's entitlements to water from those sources.

6.1 PURCHASED OR IMPORTED WATER

Historically, the Water Authority has relied on imported water supplies purchased from Metropolitan to meet the needs of its 24 member agencies. Metropolitan's supplies come from two primary sources, the State Water Project (SWP) and the Colorado River. After experiencing severe shortages from Metropolitan during the 1987–1992 drought, the Water Authority began aggressively pursuing actions to diversify the region's supply sources. Information about each water supply is contained in this section and was taken from the Water Authority's 2015 Plan. Detailed documentation verifying the Water Authority's and Metropolitan's water supplies can be found each agency's 2015 Plan.

6.1.1 Imported Water Supplies from Metropolitan

Colorado River

Metropolitan was formed to import water from the Colorado River. During the 1930s, Metropolitan built the Colorado River Aqueduct (CRA) to convey this water. Metropolitan's member agencies received the first deliveries in 1941. The aqueduct is more than 240 miles long, beginning at Lake Havasu on the Arizona/California border and ending at Lake Mathews in Riverside County. The aqueduct has capacity to deliver up to 1.3 million acre-feet per year (MAF/YR).

Before 1964, Metropolitan had a firm annual allocation of 1.212 million acre-feet (MAF) of Colorado River water through contracts with the U.S. Department of the Interior, which was enough to keep Metropolitan's aqueduct full. However, as a result of the U.S. Supreme Court decision in Arizona vs. California, Metropolitan's firm supply fell to 550,000 AF. Due to growth in demand from other states and drought conditions, since 2003, Metropolitan's deliveries have been limited to the base apportionment plus water resulting from unused apportionment water by other California holders of priorities 1 through 3, and transfer programs resulting from conservation with other senior water right holders.

Water availability from the Colorado River is governed by a system of priorities and water rights that have been established over many years. The Colorado River Lower Basin states (California, Arizona, and Nevada) have an annual apportionment of 7.5 MAF of water divided as follows: (1) California, 4.4 MAF; (2) Arizona, 2.8 MAF; and (3) Nevada, 300,000 AF. The 1931 Seven Party Agreement established California's priorities for water with the first three priorities, totaling 3.85 MAF, going to agricultural agencies and the fourth priority (550,000 AF) going to Metropolitan. Additional water must come from surplus water from unused allocations within California or from other Lower Basin states.

Metropolitan currently has a firm supply of 550,000 AF. Faced with continuing dry hydrologic challenges and increasing demands, Metropolitan has relied on its land fallowing, storage and exchange programs on the river to increase its Colorado River supplies. With the 2003 Quantification Settlement Agreement (QSA) and related agreements among the Imperial Irrigation District (IID), the Coachella Valley Water District (CVWD), State of California, Department of Interior, Metropolitan, and the Water Authority, a plan was formalized on how California will implement water transfers and supply programs that allow California to live within the state's 4.4 million AF basic annual apportionment of Colorado River water. Since then, Metropolitan has relied on cooperative transfer programs and storage programs to increase its Colorado River water deliveries beyond its firm supply.

State Water Project

Metropolitan's other water source, the SWP, is owned by the State of California and operated by the DWR. The project stretches more than 600 miles, from Lake Oroville in the north to Lake Perris in the south. Water is stored at Lake Oroville and released when needed into the Feather River, which flows into the Sacramento River and to the Sacramento-San Joaquin River Delta. In the north Delta, water is pumped into the North Bay Aqueduct for delivery to Napa and Solano counties. In the south Delta, water is diverted into the SWP's Banks Pumping Plant, where it is lifted into the 444 mile-long California Aqueduct. Some of this water flows into the South Bay Aqueduct to serve areas in Alameda and Santa Clara counties. The remainder flows southward to cities and farms in central and southern California. In the winter, when demands are lower, water is stored at the San Luis Reservoir located south of the Delta.

The reliability of SWP supplies is limited by both the level of SWP supply development and pumping restrictions due to state and federal environmental regulations and hydrology. When approved by the voters in the 1960s, the SWP was planned to deliver 4.2 million AF to 32 contracting agencies. Subsequent contract amendments reduced total contracted deliveries to 4.13 million AF and the number of contracting agencies to 29. Metropolitan's contracted entitlement is 1,911,500 AF. Metropolitan's original long-term water supply contract for 2,011,500 AF was amended as part of the 2003 QSA. Effective in 2005, the amendment resulted in an exchange agreement among CVWD, Desert Water Agency (DWA), and Metropolitan. The exchange agreement provides for the transfer of 88,100 AF of Metropolitan's Table A amounts to CVWD and 11,900 AF of Metropolitan's Table A amounts to DWA.

When voters approved construction of the SWP in 1960, state planners did not expect the full amount of contracted water to be needed for at least the first 20 years of the project. As a result, the planners anticipated that the facilities needed to produce the full contracted amount would be constructed over time as demands on the system increased. However, decisions about these additional facilities were repeatedly deferred as public attitudes and environmental regulations changed and costs increased. New state and federal environmental laws put some potential water supply sources off limits to development. More stringent water quality standards adopted by the SWRCB to protect the San Francisco Bay/Sacramento–San Joaquin River Delta have reduced the amount of water available for diversion. Environmental challenges to the SWP operations also resulted in the issuance of new biological opinions, which led to pumping restrictions that further reduced SWP exports. At the same time, California's population and water demand continued to grow.

DWR's *State Water Project Delivery Capability Report 2015* updated DWR's estimate of the current (2015) SWP delivery capability. Historically, the Capability Report provided estimates of the current and future (20 years in the future) SWP delivery capability. However, the 2015 report only showed that current deliveries continue to be impacted by significant restrictions due to operational requirements contained in federal biological opinions. The 2015 report projected that the primary component of the annual SWP deliveries will be slightly less, when compared to the preceding 2013 report.

In developing its supply capabilities, Metropolitan assumed a new Delta conveyance as fully operational by 2030 and would produce 1.2 million acre-feet of average annual SWP supplies. Metropolitan also assumes near-term actions that would provide average annual SWP water supplies of 950,000 AF.

Metropolitan's SWP supplies are projected using DWR's *2015 State Water Project Delivery Capability Report*. The estimates incorporate restrictions on SWP and CVP operations in accordance with the biological opinions of the USFWS and National Marine Fishery Service issued on December 15, 2008, and June 4, 2009, respectively. Under the reliability report, the delivery estimates for the SWP for 2020 conditions as percentage of maximum Table A amounts are 12 percent under a single dry-year (1977) condition, which is equivalent to 230,000 AF, and 51 percent under long-term average conditions, which is equivalent to 975,000 AF. In dry below-normal conditions caused by dry hydrologic conditions and regulatory restrictions, Metropolitan developed additional supplies from Central Valley storage and transfer programs.

Storage Management Programs

Metropolitan relies on water in storage to augment at times limited imported supplies. It manages its storage portfolio by storing water during wet years to meet the region's needs during critical droughts caused by varied hydrologic conditions and SWP pumping restrictions imposed to protect endangered or threatened fish species. Metropolitan's likelihood of having adequate supply capability before environmental issues that caused Delta pumping restrictions are addressed to meet projected demands, without implementing the Water Supply Allocation

Plan (WSAP), is largely dependent on its storage resources. The principles that guide the management of supply and storage are based on the framework established in the Water Surplus and Drought Management (WSDM) Plan, and is being further refined through the WSAP update process. Currently, Metropolitan has about 30 storage programs in operation that provide flexibility to meet delivery requirements. The storage accounts include groundwater and surface storage programs and facilities, within and outside of Metropolitan's service area. Metropolitan's dry-year storage portfolio has the potential to store more than 5 million AF.

Metropolitan's Draft 2015 Plan indicates that the in-region storage and programs target for "current programs" in a single dry year (based on 1977 hydrology) is 693,000 AF in 2020, 774,000 AF in 2025, and 852,000 AF in 2030. The Draft 2015 Plan also estimates that between 2035 and 2040 Metropolitan's annual supply range from the in-region storage and programs will be 956,000 and 992,000 AF, respectively, in a single dry year. The Draft 2015 UWMP estimates that the in-region storage and transfer program will be capable of serving between 693,000 AF and 992,000 AF to Metropolitan from 2020 through 2040 under average hydrology.

Table 6-1 shows Water Authority's projected deliveries from Metropolitan for 2020 through 2040.

TABLE 6-1: PROJECTED IMPORTED WATER DELIVERIES FROM METROPOLITAN TO WATER AUTHORITY (Normal Year - AF/YR)

2020	2025	2030	2035	2040
123,343	157,918	178,591	197,215	222,326

Source: San Diego County Water Authority 2015 Urban Water Management Plan.

6.1.2 Water Authority – IID Water Conservation and Transfer Agreement

On April 29, 1998, Water Authority signed a historic agreement with IID for the long-term transfer of conserved Colorado River water to San Diego County. The Water Authority-IID Water Conservation and Transfer Agreement (Transfer Agreement) is the largest agriculture-to-urban water transfer in United States history. Colorado River water will be conserved by Imperial Valley farmers who voluntarily participate in the program and then transferred to Water Authority for use in San Diego County.

On October 10, 2003, Water Authority and IID executed an amendment to the original 1998 Transfer Agreement. This amendment modified certain aspects of the 1998 Agreement to be consistent with the terms and conditions of the QSA and related agreements. It also modified other aspects of the agreement to lessen the environmental impacts of the transfer of conserved water. The amendment was expressly contingent on the approval and implementation of the QSA, which was also executed on October 10, 2003.

On November 5, 2003, IID filed a complaint in Imperial County Superior Court seeking validation of 13 contracts associated with the Transfer Agreement and the QSA. Imperial County and various private parties filed additional suits in Superior Court, alleging violations of the California

Environmental Quality Act (CEQA), the California Water Code, and other laws related to the approval of the QSA, the water transfer, and related agreements. The lawsuits were coordinated for trial. The IID, Coachella Valley Water District, Metropolitan, the Water Authority, and state defended these suits and sought validation of the contracts. In January 2010, a California Superior Court judge ruled that the QSA and 11 related agreements were invalid, because one of the agreements created an open-ended financial obligation for the state, in violation of California's constitution. In December 2011, California's Third District Court of Appeal reversed the lower court ruling that had invalidated the Transfer Agreement and QSA. The appeals court remanded several issues to the trial court, including questions about whether the QSA was properly processed under CEQA. In July 2013, a Sacramento Superior Court judge entered a final judgment validating the QSA and rejecting all of the remaining legal challenges. The judge affirmed all of the contested actions, including the adequacy of the environmental documents prepared by IID. In May 2015, the state Court of Appeal issued a ruling that dismissed all remaining appeals.

Deliveries into San Diego County from the transfer began in 2003 with an initial transfer of 10,000 AF. The Water Authority received increasing amounts of transfer water each year, according to a water delivery schedule contained in the transfer agreement. In 2015, the Water Authority received 100,000 AF. The quantities will increase annually to 200,000 AF by 2021 then remain fixed for the duration of the transfer agreement. The initial term of the Transfer Agreement is 45 years, with a provision that either agency may extend the agreement for an additional 30-year term.

During dry years, when water availability is low, the conserved water will be transferred under IID's Colorado River rights, which are among the most senior in the Lower Colorado River Basin. Without the protection of these rights, the Water Authority could suffer delivery cutbacks.

Based on the terms and conditions in the Transfer Agreement, Table 6-2 shows the anticipated delivery schedule of the conserved transfer water in 5-year increments. There is adequate documentation to demonstrate the availability of this supply, and therefore, the supply yields shown in Table 6-2 will be included in the reliability analysis found in Section 7 of this Plan.

TABLE 6-2: PROJECTED WATER AUTHORITY – IID TRANSFER SUPPLIES
(Normal Year - AF/YR)

2020	2025	2030	2035	2040
190,000	200,000	200,000	200,000	200,000

Source: San Diego County Water Authority 2015 Urban Water Management Plan.

6.1.3 Water Authority - All-American and Coachella Canal Lining Projects

As part of the QSA and related contracts, the Water Authority contracted for 77,700 AF/YR of conserved water from projects that lined portions of the AAC and CC. The projects reduced the loss of water that occurred through seepage, and the conserved water is delivered to the Water Authority. This conserved water will provide the San Diego region with an additional 8.5 million AF over the 110-year life of the agreement.

The CC lining project began in November 2004 and was completed in 2006. Deliveries of conserved water to the Water Authority began in 2007. The project constructed a 37-mile parallel canal adjacent to the CC. The AAC lining project was begun in 2005 and was completed in 2010. The lining project constructed a concrete-lined canal parallel to 24 miles of the existing AAC from Pilot Knob to Drop 3.

The AAC lining project will yield 67,700 AF of Colorado River water per year available for allocation to the Water Authority and San Luis Rey Indian Water Rights Settlement Parties. The CC lining project will yield 26,000 AF of Colorado River water each year available for allocation. The 2003 Allocation Agreement provides for 16,000 AF/YR of conserved canal lining water to be allocated to the San Luis Rey Indian Water Rights Settlement Parties. The remaining amount, 77,700 AF/YR, is to be available to the Water Authority, with up to an additional 4,850 AF/YR available to the Water Authority depending on environmental requirements from the CC lining project. For planning purposes, the Water Authority assumes that 2,500 AF of the 4,850 AF will be available each year for delivery, for a total of 80,200 AF/FY of that supply. According to the Allocation Agreement, IID has call rights to a portion (5,000 AF/YR) of the conserved water upon termination of the QSA for the remainder of the 110 years of the Allocation Agreement and upon satisfying certain conditions. The term of the QSA is for up to 75 years.

Table 6-3 shows the anticipated delivery schedule of conserved supplies from the canal lining projects in 5-year increments. Adequate documentation exists to demonstrate the availability of this supply, and therefore, the reliability analysis found in Section 7 of this Plan will include the supply yields shown in Table 6-3 as part of the total supply numbers.

TABLE 6-3: WATER AUTHORITY PROJECTED SUPPLY FROM CANAL LINING PROJECTS (Normal Year - AF/YR)

Water Supply Sources	2020	2025	2030	2035	2040
CC Lining Project	24,000	24,000	24,000	24,000	24,000
AAC Lining Project	56,200	56,200	56,200	56,200	56,200
Total	80,200	80,200	80,200	80,200	80,200

Source: San Diego County Water Authority 2015 Urban Water Management Plan.

6.1.4 Water Authority - Carlsbad Seawater Desalination Plant

Development of seawater desalination in San Diego County will assist the region in diversifying its water resources, reduce dependence on imported supplies, and provide a new drought-proof, locally treated water supply. The Carlsbad Desalination Project (Project) is a fully-permitted seawater desalination plant and conveyance pipeline developed by Poseidon, a private investor–owned company that develops water and wastewater infrastructure. The Project, located at the Encina Power Station in Carlsbad, began commercial operation on December 23, 2015, and can provide a highly reliable local supply of up to 56,000 AF/YR for the region.

Table 6-4 shows the estimated annual yield in 5-year increments. Adequate documentation exists to demonstrate the availability of this potential supply in the future, and therefore, the

reliability analysis in Section 7 of this Plan will include the supply yields shown in Table 6-4 as part of the total supply numbers.

TABLE 6-4: WATER AUTHORITY PROJECTED SEAWATER DESALINATION SUPPLY (Normal Year - AF/YR)

2020	2025	2030	2035	2040
50,000	50,000	50,000	50,000	50,000

Source: San Diego County Water Authority 2015 Urban Water Management Plan.

6.1.5 Water Authority - Other Desalination Efforts

MCB Camp Pendleton Seawater Desalination Project

The feasibility of a potential seawater desalination facility located on Marine Corp Base (MCB) Camp Pendleton is being evaluated as a long-term resource strategy to manage future supply uncertainties. Moving forward with development of the project would take further actions by the Water Authority Board of Directors and the action would be considered in the context of member agency implementation of local supplies, such as potable reuse, as well as future changes to imported supply reliability.

The Water Authority, in collaboration with MCB Camp Pendleton, completed a feasibility study for a potential 50 MGD to 150 MGD seawater desalination project on Camp Pendleton in June 2009. The following year, a Memorandum of Understanding (MOU) between the Water Authority and MCB Camp Pendleton was executed to establish the framework for cooperation between the two parties during the performance of additional technical and environmental studies and to ensure that the activities do not conflict, impede, or interfere with MCB Camp Pendleton's primary mission of training its operational force. The MOU did not commit either party to advance the project beyond the planning studies contemplated in the MOU.

In October 2013, these additional planning-level studies and field investigations were finalized to further define project requirements, including the feasibility of subsurface and screened open ocean intake alternatives, brine discharge methods, treatment processes and plant configurations, power supply requirements, alternative conveyance alignments, the integration of new supplies into the regional aqueduct system, and impacts to MCB Camp Pendleton operations. The results further validated overall project feasibility, including the viability of both the screened open ocean and subsurface intakes, and the practicality of a diffuser type brine discharge system.

The project was also considered in the 2013 Regional Water Facilities Optimization and Master Plan Update as a new supply alternative capable of addressing the region's long-term need for new supply development. As noted in the 2013 Master Plan Update, the need for new regional supply development will increase in the years beyond 2025 in correlation with projected population increases. The Master Plan Update recommended an adaptive management approach for a future Camp Pendleton project whereby future major decisions affecting project implementation would need to consider, among other factors, the implementation of the City

of San Diego's Pure Water Program, the progress of the Bay Delta Conservation Program, and other local reuse and desalination supplies currently in development, along with future changes to imported supply reliability.

The 2013 Master Plan Update further noted that timely regulatory review and successful permitting may hinge on the viability of the open-ocean or subsurface intake options to provide feedwater for the reverse osmosis membranes. In March 2015, the Water Authority Board of Directors approved the intake studies and awarded a contract in September 2015 to execute the Intake Testing Program. This testing program was initiated in late 2015 and is anticipated to take approximately two years to complete.

Rosarito Beach Bi-national Desalination Plant Feasibility Evaluation and Preliminary Design

The Water Authority is participating with the United States and Mexico in a bi-national review of potential water management and water supply programs that could benefit Colorado River water users of both countries. As part of this effort, a bi-national workgroup formed to study potential new water supplies recommended the evaluation and preliminary design of an initial 25 MGD (expandable to 50 MGD) seawater desalination plant that would be located at Rosarito Beach in Baja California, Mexico.

If built, product water from the plant would be available to water users in the United States and Mexico. For water users in the United States, the water could be delivered either directly to the San Diego region, using a cross-border pipeline, or possibly by exchange, with Mexico taking delivery of the product water and leaving an equivalent amount of Colorado River water available for United States water users.

6.2 GROUNDWATER

In low run-off years, VID may supplement its local water production by pumping groundwater from the Warner Basin aquifer. This water is pumped into Lake Henshaw for storage and subsequent delivery to VID and the City of Escondido. Because the pumped groundwater is stored in an open reservoir where it blends with surface run-off, it is reported to the State as surface water production. Water stored in Lake Henshaw, including pumped groundwater, is subject to evaporative and other storage losses. Approximately one-half of the groundwater production is distributed for VID use, while the other half is distributed to the City of Escondido by contract. The wellfield is comprised of 16 wells with groundwater levels ranging from 150 to 350 feet below surface, depending on hydrology and pumping history. The water quality is within the standards set for acceptable drinking water by the federal government and State Water Resources Control Board.

6.2.1 Basin Description

The Warner Valley Groundwater Basin (Warner Basin) comprises 24,000 acres and is one of 515 alluvial groundwater basins and sub-basins recognized by the State and described in DWR Bulletin 118.

Over the last 50 years, the District has commissioned several studies of its local water supplies which have also evaluated the characteristics of the Warner Basin. These studies have each had different objectives, utilizing different hydrogeologic assumptions, and benefiting from different historical data sets. A 2002 study estimates that the total usable Warner Basin aquifer storage is about 400,000 AF; only about 150,000 AF of active storage volume is located in the aquifer where extraction is feasible using currently operating VID wells.

6.2.2 Groundwater Management

VID has 16 production wells that pump from depths of 150 to 350 feet, depending on rainfall and length and extent of pumping operations. VID's operational procedure is to use its surface water supply, as described in Section 6.3, when available and conserve its groundwater for dry years when run-off is minimal and surface supplies are reduced.

In dry years, groundwater is pumped from the well field into its surface water storage reservoir and released as needed. In wet years, the surface water supply is used and pumping operations cease, permitting the basin to recharge and groundwater levels to rise. Thus, the groundwater basin can act as a water bank, allowing deposits in wet years and withdrawals in dry years.

In September 2014, the Sustainable Groundwater Management Act (SGMA) was signed into law. The law provides new tools and authorities for local agencies to manage groundwater resources within their jurisdictions to achieve a sustainable use of those resources within a 20-year implementation period. While SGMA provides specific mandates only for those groundwater basins deemed by the State to be "medium" or "high" priority groundwater basins, the law encourages the formation of "Groundwater Sustainability Agencies" (GSAs) and the preparation of "Groundwater Sustainability Plans" (GSPs) for all groundwater basins, even those deemed "low" and "very low" priority basins.

DWR has classified the Warner Basin as a "very low" priority basin. Nevertheless, the Warner Basin represents a significant water source for VID. VID continues to investigate groundwater resources in the Warner Basin and whether forming a Warner Valley GSA is in the best interest of VID and its customers.

6.2.3 Overdraft Conditions

The Warner Basin aquifer has not been adjudicated nor has it been identified as being in overdraft, as indicated by its classification as a "very low" priority basin as described in the previous section.

6.2.4 Historical Groundwater Pumping

VID studies indicate that it has about 150,000 AF of usable storage. Since 1960, the District's median groundwater production has been 7,728 AF/YR. The last five years of total groundwater production is summarized in Table 6-5. The amount of groundwater projected to be pumped during the period covered by the 2015 Plan is shown in Table 6-6. As discussed in Section 6.2, only

a portion of the groundwater pumped by VID is available to augment VID's water supply, and this projected available groundwater is included in the projections of local surface water supply presented in Table 6-7.

TABLE 6-5: HISTORICAL GROUNDWATER PRODUCTION (AF/YR)

	2011	2012	2013	2014	2015
Production	4,955	3,782	9,985	8,268	7,923

TABLE 6-6: PROJECTED GROUNDWATER PRODUCTION (AF/YR)

	2020	2025	2030	2035	2040
Production	7,728	7,728	7,728	7,728	7,728

6.3 SURFACE WATER

In 1946, VID purchased the Warner Ranch, which included Henshaw Dam and Lake Henshaw. Lake Henshaw was VID's sole supply of water until the formation of the Bueno Colorado Municipal Water District in 1954. Since that time, an annual average approximately 30% of VID's supply of water has come from Lake Henshaw and 70% from Water Authority. Table 3-3 shows the amount of water received from both sources from FY 1990-91 through FY 2014-15.

Lake Henshaw is a 52,000 AF capacity water supply reservoir located on the San Luis Rey River, about 25 miles east of the VID service area. Incidental recreational opportunities, including camping, fishing, boating and seasonal waterfowl hunting, are managed by a concessionaire under contract with VID. The 200 square mile watershed is largely undeveloped and consists of a mix of grassland, chaparral, and oak and coniferous forests. About one third of the watershed is owned by VID and is managed to protect water quality. The undeveloped character of the watershed and VID's management activities contribute to the high quality of this local water supply.

Both natural run-off developed above Lake Henshaw and groundwater pumped from the Warner Basin are held as surface water in Lake Henshaw. The water is delivered to VID, the City of Escondido, and the Rincon Band of Indians under terms of several governing contracts. While the amount of water delivered to each party is dependent on annual hydrologic conditions, the median local water delivery to VID since 1960, including groundwater production and surface water run-off, is 5,062 AF/YR.

VID has yet unresolved litigation pertaining to its use of the waters of the San Luis Rey River, including both its Lake Henshaw and Warner Basin groundwater supplies. In 1969, five bands of Mission Indians (the Indian Bands) and the United States initiated litigation against the predecessors of City of Escondido and VID, disputing the relative rights among the litigants to the use of the waters of the San Luis Rey River. After years of court action, the parties reached an Agreement in Principle to settle the dispute in 1985. Legislation authorizing the settlement was enacted on November 17, 1988, as the San Luis Rey Indian Rights Settlement Act (Title I of Public Law 100-675, "Settlement Act"). The Settlement Act authorized the Indian Bands to enter into a settlement agreement, established a

federal trust in the amount of $30,000,000 plus interest (from the date of enactment) for settlement implementation, and directed the Secretary of the Interior to arrange for the development of 16,000 AF of supplemental water per year for use by the settlement parties.

With the Secretary of the Interior reserving 16,000 AF of water produced by the All American and Coachella canal lining projects for the settlement parties as part of the QSA, a settlement was finally reached and executed by the settlement parties (VID, City of Escondido and the Indian Bands) in 2012 and by the federal government (Departments of Interior and Justice) in 2015. All that remains is an enabling amendment to the Settlement Act and dismissal of claims in Federal Court. The settlement parties will receive conserved water from the lining projects in perpetuity (which differs from Water Authority's contract as discussed in subsection 6.1.3). It is anticipated that VID will be made nearly whole with respect to its local water supply as a result of the settlement. Pending implementation of the settlement, the status quo has been maintained and VID has continued its historic diversions of water from the local supply.

Table 6-7 shows current and projected local surface water supply deliveries in 5 year increments.

TABLE 6-7: PROJECTED LOCAL SURFACE WATER SUPPLY
(Normal Year - AF/YR)

2020	2025	2030	2035	2040
5,062	5,062	5,062	5,062	5,062

6.4 STORMWATER

VID does not have a stormwater recovery system; however, it works with the City of Vista to minimize irrigation run-off, thus lessening the burden that this source puts on the stormwater system.

6.5 WASTEWATER AND RECYCLED WATER

6.5.1 Recycled Water Coordination

VID's Board of Directors approved a Water Reclamation Master Plan (WRMP) in August 1995. The goal was to reduce potable water demand within VID's service area by providing recycled water to certain targeted customers. Upon implementing the recommended phases of the WRMP approximately 2,200 AF of recycled water could be available for distribution within VID on an annual basis. This would require significant investments in treatment, storage and distribution infrastructure by the City of Vista and the Buena Sanitation District. Currently, there is no recycled water being delivered to customers in VID's service area.

During the development of the WRMP, agencies that provide wastewater service within VID's jurisdictional boundaries, as well as the Water Authority, were contacted to obtain information about existing and planned reclamation infrastructure and to identify a potential market for

recycled water. Several of the agencies provide both water and wastewater services. The following agencies were contacted and provided data and other information during the development of the WRMP and received copies of the WRMP: City of Vista/Buena Sanitation District (wastewater), City of Oceanside (water and wastewater), Encina Wastewater Authority (wastewater), San Diego County Water Authority (water) and Vallecitos Water District (water and wastewater).
The Water Authority did complete a Regional Recycled Water System Study in March 2002, which found that there was an imbalance in the geographic locations of the recycled water sources and market. The Study did note that a regional system could be created by incorporating existing Water Authority facilities into other local agencies' future recycled water system expansions, thereby linking recycled water production facilities with markets.

In June 2010, VID joined the Olivenhain Municipal Water District, Carlsbad Municipal Water District, Vallecitos Water District, Santa Fe Irrigation District, City of Oceanside, Leucadia Wastewater District, City of Escondido, Rincon Del Diablo Municipal Water District and the San Elijo Joint Powers Authority (North San Diego Water Reuse Coalition) to investigate the expanded use of recycled water within north San Diego County. The Coalition has had an engineering report prepared that analyzed existing and proposed recycled water facilities and evaluated each of the participating agencies ability to interconnect and maximize the use of recycled water within their combined service areas. The report is being used to seek state and federal funding. It is unknown whether funding will be available to implement any of the report findings or whether the report findings will be fully implemented, resulting in recycled water being delivered within VID's service area.

6.5.2 Wastewater Collection, Treatment and Disposal

City of Vista Wastewater Collection System

The City of Vista's wastewater collection system includes approximately 229 miles of public sewer mains and trunks ranging in size from 6 to 42 inches in diameter and one pump station serving about 16,000 parcels. The Vista system conveys an annual average flow of 5.4 million gallons per day. The cities of Vista and Carlsbad share ownership of an interceptor sewer which routes sewage over 7 miles through two pump stations and force mains to the Encina Water Pollution Control Facility (EWPCF).

Buena Sanitation District Collection System

The Buena Sanitation District wastewater collection system, which is operated and maintained by the City of Vista, is comprised of 106 miles of public sewer mains and trunks ranging in size from 4 to 30 inches in diameter and one pump station serving over 5,300 parcels. The Buena system conveys an annual average flow of just over 3 million gallons per day. Sewer collected by the Buena system flows about 5.5 miles through one pump station to the EWPCF.

Shadowridge Water Reclamation Plant

The Buena Sanitation District/City of Vista owns the Shadowridge Water Reclamation Plant (SWRP). Recycled water produced at the SWRP was being used to supply the Shadowridge Golf Course. The City of Vista suspended operation of the SWRP in December 2003 due to high production costs.

In 2009, the City, with assistance from the Water Authority and VID, initiated work to determine the feasibility of re-commissioning the SWRP. The feasibility study, which evaluated three alternatives including upgrading the plant to make it a 2 million gallon per day (MGD) facility, has been completed. The City has provided a copy of the study to the North San Diego Water Reuse Coalition to incorporate into their evaluation of regional recycled water project in north San Diego County.

The decision to move forward with re-commissioning the SWRP is on-hold until the regional project is complete, including the evaluation of the funding sources for capital and operating costs. While operation of the SWRP is suspended, the Shadowridge Golf Course is supplied by a private well and VID's potable water system. Due to the uncertainty of a recycled water source, a conservative approach was taken in the update of this report, and it was assumed that no recycled water would be supplied within VID's service area.

As noted above, the SWRP is not in service and is only used for the emergency storage of sewage in the event of a sewer force main failure.

Distribution System

California Water Code Sections 13555.2 and 13555.3 enacted in 1992 encourage new developments in areas where recycled water is available, or planned to be available, to provide separate plumbing systems to accommodate the use of recycled water. Any California community with more than 3,000 customer connections is required to comply with this code section. VID has encouraged developers to install dual plumbing systems since 1992. However, developers have not been required to install dual pipeline since recycled water supplies are limited and the stability of the recycled water source in Vista is uncertain.

Encina Water Pollution Control Facility

Encina Wastewater Authority manages wastewater collection and treatment for the City of Vista and other north county cities and special districts. Currently, all of the wastewater from the City of Vista (excluding storm water run-off), is conveyed to and treated at the Encina Water Pollution Control Facility (EWPCF). The facility is located on the Pacific coast in the City of Carlsbad approximately 7 miles west of VID's service area.

EWPCF, designed with an ocean outfall for wastewater disposal, began treating county-wide wastewater in 1965. EWPCF has a treatment capacity of over 40 million gallons per day (MGD). Wastewater is treated to secondary standards, which means that the entire volume of wastewater that is processed at the facility has the potential to be used as recycled water.

Tables 6-8 and 6-9 summarize the collection, treatment, use and disposal of wastewater within VID.

TABLE 6-8: WASTEWATER COLLECTED AND TREATED (AF/DAY)

	2015	2020	2025	2030	2035	2040
Wastewater Collected in Service Area	21.4	23.6	26.1	28.8	31.8	35.1
Wastewater Treated in Service Area	0	0	0	0	0	0
Quantity that Meets Recycled Water Standard	0	0	0	0	0	0

Source: City of Vista

TABLE 6-9: DISPOSAL OF WASTEWATER (NON-RECYCLED) (AF/DAY)

Method of Disposal	Treatment Level	2015	2020	2025	2030	2035	2040
Ocean Outfall	Secondary	21.4	23.6	26.1	28.8	31.8	35.1

Source: City of Vista

6.5.3 Recycled Water System

In its 2010 Plan, VID anticipated distributing 0 AF of recycled water annually (2015 - 2035) to the Shadowridge Golf Course. As projected, VID has not distributed any recycled water to the golf course and does not anticipate distributing any recycled water annually during the period covered by the 2015 Plan (2020 – 2040). The golf course is currently using well water for irrigation purposes.

6.5.4 Recycled Water Beneficial Uses

At this time, it does not appear that any recycled water will be distributed during the period covered by the 2015 Plan, unless it becomes economically feasible to re-commission the SWRP and the Buena Sanitation District/City of Vista begins treating wastewater at the facility once again, or VID is able to purchase and transport recycled water from a neighboring agency so it can be delivered to the golf course or other potential users, such as schools and parks. Due to the uncertainty of a recycled water source, it is assumed that no recycled water will be supplied within VID through 2040. VID will continue to support and participate in regional efforts to implement recycled water projects which may provide a source of recycled water to its service area in the future.

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

With the SWRP decommissioned, VID does not have the ability to deliver any recycled water to customers. Due to the uncertainty of any recycled water source and the uncertainty whether a regional recycled water project would bring another source into its service area, VID has not pursued ways to distribute recycled water to potential customers. It is unlikely that additional recycled water will be distributed during the period covered by this Plan.

Once recycled water is available for distribution, VID could use one or a combination of the following incentives to encourage customers to convert to recycled water use:

- Pay for the design of customer retrofits.
- Establish a grant program to pay for the retrofit, based on the size of the facility and the volume of recycled water to be used.
- Establish loan program for retrofits. The customer would pay potable rates until the loan is paid off.
- Establish an incentive program whereby customers would receive a credit towards their loan repayment for every acre-foot of recycled water used that offsets current potable water use.
- Establish loan program for retrofits with a 5 or 10 year pay back.
- The customer could pay for on-site retrofits, and VID could pay for the distribution main, service connection, water meters, signage, and the labels at the controllers.
- Offer new users a rate discount for three years.
- "Guarantee" recycled water supply reliability (excluding disaster conditions).
- Initiate a public education campaign regarding the safety and reliability of recycled water.

As previously stated, VID continues to work to find a way to re-commission the SWRP or find another source of recycled water. If financial resources become available to perform the necessary upgrades to re-start the plant and/or another source of recycled water becomes available, VID may be able to supply recycle water to the golf course and other customers near the golf course. Additional deliveries would be contingent on the SWRP capacity, recycled water customers, distribution system expansion and other regional facilities that may become available.

6.6 DESALINATED WATER OPPORTUNITIES

As stated in the Act, the plan shall describe opportunities for the development of desalinated water, including but not limited to, ocean water, brackish water and groundwater, as a long term supply. By virtue of its location, VID does not have an opportunity to develop its own desalination project. However, as a member agency of the Water Authority, VID receives desalinated seawater from the regional desalination facility in Carlsbad. Subsections 6.1.4 and 6.1.5 provide more detailed information on the Water Authority's desalination efforts.

6.7 EXCHANGES OR TRANSFERS

VID currently has water system inter-ties with five of its neighboring water retailing agencies: Vallecitos Water District, Rincon del Diablo Municipal Water District, the City of Carlsbad, the City of Escondido and the City of Oceanside. These inter-ties are for the purpose of transferring limited amounts of water between agencies during emergencies and short-term planned or unanticipated water system outages.

As described in subsection 6.1.2, the Water Authority has engaged in a transfer with the IID. Under this agreement, water conserved by IID will be transported by Metropolitan through the Colorado River Aqueduct and delivered to the Water Authority.

6.8 FUTURE WATER SUPPLY PROJECTS

As described in subsection 6.5 of this Plan, the decision to move forward with re-commissioning the SWRP is on-hold until the regional recycled project is complete, including the evaluation of the funding sources for capital and operating costs. Additionally, it is not known whether regional or other agencies' facilities will be able to provide water to VID's service area. Therefore, it is assumed that no recycled water would be supplied from this project during the period covered by this Plan.

As documented in this Plan, VID will rely on the Water Authority to supply a growing percentage of future water demands. The Water Authority and Metropolitan are pursuing projects to diversify and enhance their supplies. Due to the reliance on these two agencies, VID's 2015 Plan contains information on the current and future water supply projects of Metropolitan and the Water Authority. Section 6.1, Purchased or Imported Water, describes future water supply projects and programs for both agencies, and Chapter 7, Water Supply Reliability, provides summary information on each agency's supply reliability. Details regarding the Water Authority's and Metropolitan's future water supply projects and programs and supply reliability can be found in each agency's 2015 Plan.

6.9 SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER

VID plans to use its local water supply, as described in detail in this subsection, in conjunction with water received from the Water Authority to meet demands in its services area. If VID delivers its local water supply as projected and the Water Authority's and Metropolitan's supplies are developed as planned, no shortages are anticipated within VID's service area in a normal year.

Table 6-10 provides total quantities of current and planned water supplies for VID in a normal year (NOTE: The quantities shown in the table below assume the implementation and achievement of SBX 7-7 conservation goals).

TABLE 6-10: CURRENT AND PLANNED WATER SUPPLIES
(Normal Year - AF/YR)

Water Supply Sources	2015	2020	2025	2030	2035	2040
Purchased from Water Authority	16,215	14,682	16,258	17,567	18,255	19,085
VID surface water diversions	1,618	5,062	5,062	5,062	5,062	5,062
VID produced groundwater	-	-	-	-	-	-
Recycled Water	0	0	0	0	0	0
Total	**17,833**	**19,744**	**21,320**	**22,629**	**23,317**	**24,147**

6.10 WATER QUALITY

The Act requires that the 2015 Plan include information, to the extent practicable, on the quality of existing supply sources and the manner in which water quality affects water management strategies and supply reliability. This section summarizes water quality issues associated with supplies serving VID. Information on imported and regional water supplies was taken from the Water Authority's 2015 Plan.

Water agencies treat all water to meet stringent state and federal drinking water standards before delivering it to customers. However, source water of poor quality will make it increasingly expensive and difficult to meet those standards.

6.10.1 Colorado River

The Colorado River is the primary source of the Water Authority's imported water supply. High salinity levels, uranium, and perchlorate contamination represent the primary areas of concern with the quality of Colorado River supplies. Managing the watershed of the Colorado River has been the most effective method for controlling these elements of concern.

Salinity

Salts in the Colorado River System are indigenous and pervasive, mostly resulting from saline sediments in the basin that were deposited in prehistoric marine environments. They are easily eroded, dissolved, and transported into the river system. Agricultural development and water diversions over the past 50 years increase the already high naturally occurring levels of total dissolved solids (TDS).

Water imported via the CRA has a TDS averaging approximately 650 milligrams per liter (mg/l) during normal water years. During the high water flows of 1983-1986, salinity levels in the CRA dropped to a historic low of 525 mg/l. However, during the 1987-1990 drought, higher salinity levels returned. During an extreme drought, CRA supplies could exceed 900 mg/l. High TDS in water supplies leads to high TDS in wastewater, which lowers the usefulness of the water and increases the cost of recycled water. In addition to the link between water supply and water quality, high levels of TDS in water supplies can damage water delivery systems and home appliances. During 2010 through 2014, the TDS levels in Lake Havasu and Lake Mathews ranged from 570 to 640 mg/l. These lakes contain 100 percent Colorado River water.

To reduce the effects of high TDS levels on water supply reliability, Metropolitan approved the Salinity Management Policy in April 1999. One of the policy goals is to blend Colorado River supplies with lower-salinity water from the SWP to achieve delivered water salinity levels less than 500 mg/l TDS. Since 1976, the TDS levels in Metropolitan's Colorado River supply have had an average concentration of 630 mg/l. In addition, to foster interstate cooperation on this issue, the seven basin states formed the Colorado River Basin Salinity Control Forum (Forum). To lower TDS levels in Colorado River supplies, the Forum develops programs designed to prevent

a portion of the abundant salt supply from moving into the river system. The Colorado River Basin Salinity Control Program targets the interception and control of non-point sources, such as surface runoff, as well as wastewater and saline hot springs.

Perchlorate

Perchlorate was first detected in the Colorado River water in June 1997 and was traced to the Las Vegas Wash. The source of contamination was found to be emanating from a chemical manufacturing facility in Henderson, Nevada. Because of growing concerns over perchlorate levels in drinking water, in 2002 Metropolitan adopted a Perchlorate Action Plan. Objectives include expanded monitoring and reporting programs and continued tracking of remediation efforts in the Las Vegas Wash. Metropolitan has been conducting monthly monitoring of Colorado River supplies. The Nevada Department of Environmental Protection manages a comprehensive groundwater remediation program in the Henderson area. As of December 2004, the amount of perchlorate entering the Colorado River system from Henderson has been reduced from approximately 1,000 pounds per day (lb/day) to less than 90 lb/day. As a result of the aggressive cleanup efforts, perchlorate levels in the Colorado River water have decreased significantly from a peak of 9 micrograms per liter (µg/l) in May 1998 and have remained at less than 2 µg/l since June 2006. From 2010 through 2014, the perchlorate levels in Colorado River water ranged from not detected to 1.6 µg/l with no detections since 2012.

Uranium

Naturally occurring uranium has always been present in Colorado River water and has always been under the California Maximum Contaminant Level (MCL) of 20 picocuries per liter (pCi/l). The risks to water quality have primarily come from upstream mining in Moab, Utah and other potential mining sites in the west. Currently the U.S. Department of Energy (DOE) is working to remove and dispose of mine tailings and improve groundwater quality on the Colorado River Watershed near Moab. The expected completion of this cleanup is between 2019 and 2025. Current levels are below MCL and can be treated by regional water treatment plants. Current levels at Metropolitan's intake have ranged from 1 to 6 Ci/L and are well below the MCL.

Nutrients

The Colorado River system has historically been low in nutrients, but with population growth in the watershed nutrients are still a concern. Metropolitan is involved with upstream entities along the lower Colorado River to enhance wastewater management to control nutrient loading, especially phosphorus. The Colorado River's low nutrient level has been important for blending with SWP water to reduce the nutrient level delivered to retail agencies.

Arsenic

Arsenic is another naturally occurring element that is being monitored by drinking water agencies. The state detection level for purposes of reporting is 2 micrograms per liter (µg/l), and the MCL for domestic water supplies is 10 µg/l. Between 2001 and 2014, arsenic levels in Colorado River water have ranged from not detected to 3.5 µg/l, which is well below the MCL

for arsenic. Increasing coagulant doses at water treatment plants can reduce arsenic levels for retail deliveries.

Chromium-6

Metropolitan has actively monitored the Colorado River water for chromium-6. All monitoring results have been below the detection limit for reporting. PG&E used chromium-6 as an anticorrosion agent for cooling towers at a gas compressor station located along the Colorado River near Topock, Arizona. This is a toxic cleanup site. Results of chromium-6 monitoring from the Colorado River upstream and downstream of this site have been below the detection limit for reporting.

6.10.2 State Water Project

The quality of State Water Project (SWP) water as a drinking water source is affected by a number of factors, most notably seawater intrusion and agricultural drainage from peat soil islands in the Delta. SWP water contains relatively high levels of bromide and total organic carbon, two elements that are of particular concern to drinking water agencies. Bromide and total organic carbon combine with chemicals used in the water treatment process to form disinfection by-products that are strictly regulated under the federal Safe Drinking Water Act (SDWA). Wastewater discharges from cities and towns surrounding the Delta also add salts and pathogens to Delta water, influencing its suitability for drinking and recycling.

The 2000 Record of Decision (ROD) adopted by CALFED states that CALFED will either achieve water quality targets at Clifton Court Forebay and drinking water intakes in the south and central Delta, or it will achieve an "equivalent level of public health protection using a cost-effective combination of alternative source waters, source control, and treatment technologies."

Actions to protect Delta fisheries have exacerbated existing water quality problems by forcing the SWP to shift its diversions from the springtime to the fall, when salinity and bromide levels are higher. Closure of the Delta Cross-Channel gates to protect migrating fish has also degraded SWP water quality by reducing the flow of higher quality Sacramento River water to the SWP pumps at critical times.

DWR is proposing construction of a new intake system as part of the new Bay-Delta Conservation Plan (BDCP). By moving the intakes upstream, this would improve the water quality in the Delta and could allow for increased deliveries in wet years. The "California WaterFix" (Alternative 4A) includes three new intakes along the Sacramento River and dual-bore tunnels to convey water to the existing state and federal pumping facilities, and habitat restoration measures and environmental commitments necessary to mitigate impacts in compliance with state and federal environmental laws. The environmental document for the California Water fix was released for review and comments were closed on October 20, 2015. This project will require broad support and funding commitments to implement.

Total Organic Carbon and Bromide

Total organic carbon (TOC) and bromide are naturally occurring but are elevated due to agricultural drainage and seawater intrusion as water moves through the delta. The concern with both total organic carbon and bromide is that they form disinfection byproducts (DBPs) when treated with disinfectants such as chlorine. Some DBPs have been identified and are regulated under SDWA; there are others that are not yet identified. Existing levels of bromide and TOC in Delta water supplies present challenges for water utilities to comply with the regulations. Levels of these constituents increase due to agricultural drainage and seawater intrusion into the Delta. No regulatory water quality objectives are available for bromide in the Delta. However, the CALFED Bay-Delta Program 2000 set a goal of 0.05 mg/l for bromide and 3 mg/l for TOC to minimize formation of DBPs through the treatment process and enable water suppliers to meet the MCLs. More recent information states that concentrations ranging from 0.1 to 0.3 mg/l should be adequate to meet the DBP standards. During drought periods, existing Delta water quality regularly exceeds 2 mg/l for TOC.

Several treatment plants serving the San Diego region have upgraded to ozone as a primary disinfectant to allow treatment of challenging water sources, such as SWP and continue to meet the DBP standards. Some local treatment plants use chlorine dioxide as a primary disinfectant to reduce DBP formation. Blending of the SWP source with Colorado River water also reduces precursors and DBP formation.

Nutrients

SWP supplies have significantly higher nutrient levels over the Colorado River supplies. Elevated levels of nutrients can increase nuisance algal and aquatic weed growth, which in turn affects taste and odor in product water and can reduce filter run times at water treatment plants (WTPs). Nutrient rich soils in the Delta, agricultural drainage, and wastewater discharges are primary sources of nutrient loading to the SWP. Water agencies receiving Delta water have been engaged in efforts to minimize the effects of nutrient loading from Delta wastewater plants.

Low flows, increased temperatures and increased nutrient concentrations during drought have increased the algae blooms, which produce algal toxins. Of particular concern is microcystis, a harmful species of cyanobacteria. DWR increases its application of copper compounds to control algae and aquatic weed growth during the drought. Taste and odor complaints due to Delta nutrients are dependent on the blend of imported water delivered through Metropolitan. Metropolitan developed a comprehensive program to monitor and manage algae in its source water reservoirs and to provide early warning of algae-related problems, taste, and odor events. This is an area where increased monitoring, response and oversight, and proactive management of reservoir water quality will ensure a safe water supply.

Salinity

Water supplies from the SWP have significantly lower TDS levels than the Colorado River, averaging 250 mg/l in water supplied through the East Branch and 325 mg/l on the West Branch. Because of this lower salinity, Metropolitan blends SWP water with high salinity CRA

water to reduce the salinity levels of delivered water. However, both the supply and the TDS levels of SWP water can vary significantly in response to hydrologic conditions in the Sacramento–San Joaquin watersheds.

The TDS levels of SWP water can also vary widely over short periods of time. These variations reflect seasonal and tidal flow patterns, and they pose an additional problem to blending as a management tool to lower the higher TDS from the CRA supply. For example, in the 1977 drought, the salinity of SWP water reaching Metropolitan increased to 430 mg/l, and supplies became limited. During this same event, salinity at the Banks pumping plant exceeded 700 mg/l. Under similar circumstances, Metropolitan's 500 mg/l salinity objectives could only be achieved by reducing imported water from the CRA. Thus, it may not be possible to maintain both salinity standards and water supply reliability unless salinity levels of source supplies can be reduced.

Arsenic

Between 2001 and 2008, arsenic levels in SWP water have ranged from not detected to 4.0 µg/l. Increasing coagulant doses at water treatment plants can reduce arsenic levels for retail deliveries. Groundwater storage programs in the SWP appear to provide the greatest risk of arsenic contamination; therefore, a pilot arsenic treatment facility is being tested by one of the groundwater partners. Non-project deliveries of groundwater to the California Aqueduct increase during drought periods. Although the groundwater being pumped into the aqueduct contains arsenic in concentrations above the MCL, the arsenic in the blended water remains below the MCL. The intent is to manage inflows so the arsenic concentrations do not increase by more than 2 µg/l.

6.10.3 Surface Water

The region's water quality is influenced by a variety of factors depending on its source. As stated above, water from the Colorado River and from Northern California are vulnerable to a number of contributors to water quality degradation. Regional surface and groundwater are primarily vulnerable to increasing urbanization in the watershed, agriculture, recreational uses, wildlife, and fires.

Surface water protection is fundamentally important to all of California. The State Water Resources Control Board requires large utilities delivering surface water to complete a watershed sanitary survey every five years to examine possible sources of drinking water contamination. The survey includes suggestions on how to protect water quality at the source.

In 2012, VID, in conjunction with the City of Escondido, prepared a watershed sanitary survey (which includes a source water assessment) for the local watershed. The survey assessed activities that had the potential to influence the quality of water delivered from Lake Henshaw, Dixon Lake and Lake Wohlford. While the survey identified a number of activities that have the potential to adversely affect water quality, including residential septic facilities, highway run-off, and agricultural

and recreational activities, no contaminants from these activities have been detected in the local water supply. An updated survey is currently being prepared.

The United States Environmental Protection Agency (EPA) also requires utilities to complete a Source Water Assessment (SWA). Information collected in SWAs is used to evaluate the vulnerability of water sources to contamination and any changes in potential sources of contamination to help determine if more protection measures are needed. EPA requires utilities to complete a SWA that uses information collected in the sanitary surveys.

Metropolitan completed its SWA of its Colorado River and SWP supplies in December 2002. According to the assessment, Colorado River supplies are considered to be most vulnerable to impacts from recreation, urban/storm water run-off, increasing urbanization in the watershed and wastewater. SWP supplies are most vulnerable to contamination from urban/storm water run-off, wildlife, agriculture, recreation and wastewater. Metropolitan also completed watershed sanitary surveys of its source water supplies from the Colorado River in 2010 and the SWP in 2011.

In the past, regional surface water quality has been considered good to excellent. Water quality can vary with imported water inflows and surface water contamination. Surface water protection is considered a key element in regional water quality. Currently, the most significant water quality issue that affects the public is algae blooms, which can create taste and odor problems.

6.10.4 Groundwater

Groundwater is pumped from the Warner Ranch wellfield through a series of open channels and siphons to Lake Henshaw, where it becomes part of the surface water supply. Like surface water, the groundwater quality in the Warner Basin has the potential of being affected by urbanization in the watershed, agriculture and recreation. While the 2012 Watershed Sanitary Survey identified a number of activities, including, but not limited to, highway run-off, agricultural operations and recreation, that have the potential to adversely impact the groundwater quality in the Warner Basin, no contaminants from these activities have been detected in the local water supply.

6.10.5 Recycled Water

Water quality, as it pertains to high salinity supplies, is a significant implementation issue for recycled water projects. High TDS source water poses a special problem for water recycling facilities because conventional treatment processes are designed to remove suspended particles, but not dissolved particles. TDS removal, or demineralization, requires an advanced treatment process, which can increase project costs significantly.

Residential use of water typically adds 200 to 300 mg/l of TDS to the wastewater stream. Self-regenerating water softeners can add another 60 to 100 mg/l. Infiltration of brackish groundwater into sewer lines can also cause an increase in TDS. If an area receives a water supply with TDS of more than 700 mg/l, and residents add 300 mg/l or more through normal

use, the recycling facility will produce recycled water with a TDS concentration of 1,000 mg/l or higher. In general, TDS concentrations over 1,000 mg/l become problematic for irrigation and industrial reuse customers. This problem greatly limits the potential uses and marketability of recycled water, particularly for agricultural purposes, because certain crops and nursery stock are sensitive to irrigation water with TDS levels exceeding 1,000 mg/l.

6.10.6 Seawater Desalination

The feedwater source for the proposed regional seawater desalination project at the Encina Power Station in Carlsbad is the Pacific Ocean. The salinity of the Pacific Ocean in San Diego County is fairly stable, with a TDS concentration around 34,000 mg/l. To address TDS concentrations at this level, the desalination facility will use a reverse osmosis (RO) membrane treatment process to reduce the TDS to less than 350 mg/l, resulting in approximately 99 percent removal of TDS and a supply that meets drinking water standards. The desalinated water is blended into the Water Authority treated water system downstream of the Twin Oaks Valley Treatment Plant. The concentration of TDS in the blend water will vary seasonally depending on system demands. Agencies upstream of Twin Oaks will not receive the lower TDS water from the Seawater Desalination Plant.

Prior to the RO process, the feedwater will be pretreated to remove suspended solids, including organic material. The RO process will then remove the dissolved solids. Next, the product water will be post-treated to prevent corrosion in the distribution system and improve the aesthetic quality of the water. This process generally involves adding alkalinity to the treated water. The final step, a disinfection process, provides a disinfection residual in the treated water.

A single-pass RO process of seawater generally results in about 50 percent recovery of treated water. The remaining 50 percent is discharged as concentrate, with about twice the salinity of the original feedwater. The concentrate will be diluted to avoid negative impacts to the marine environment from the elevated salinity levels at the point of discharge.

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CHAPTER 7 WATER SUPPLY RELIABILITY

The Act requires that an urban water supplier include, as part of its plan, an assessment of the reliability of its water supply. The assessment must compare the total projected water use with the expected supply over the next 20 years in five-year increments. The reliability assessment is required for normal, single-dry and multiple-dry water years. The assessment contained in the 2015 Plan projects reliability for the next 25 years. This section presents a summary of water supplies and demands within VID's service area as well as an assessment of water supply reliability.

7.1 CONSTRAINTS ON WATER SOURCES

The Act requires that every urban water supplier include, as part of its plan, an assessment of the reliability of its water supply and the vulnerability of the supply to seasonal or climatic shortages. The Act also requires that for any water source that may not be available at a consistent level of use, given specific legal, environmental or water quality factors, the agency must describe, to the extent practicable, plans to replace that source with alternative sources or water demand management measures.

As described in subsections 6.2 and 6.3 local water production is developed from both groundwater and surface water sources which are managed conjunctively to minimize the need for imported water supplies. The production available from this system is highly variable and is dependent on hydrologic conditions within the 200 square mile watershed of the upper San Luis Rey River. This local supply variability is influenced by many factors, including climactic conditions such as El Nino, the Pacific Decadal Oscillation and jet stream variations.

Further, the reliability of this supply is subject to the integrity of the transmission infrastructure necessary to deliver it to VID's service area. After release from Henshaw Dam, local water travels in the streambed of the San Luis Rey River for about ten miles where it is diverted into the Escondido Canal. This structure, originally built in the 1890's and expanded in the 1920's, extends about 12 miles along the remote contours of steeply sloped hillsides with limited accessibility. At the end of the Escondido Canal, local water is delivered to Lake Wohlford. Water is released from Lake Wohlford through the Bear Valley power plant and several miles of pipeline before it is pumped into the headworks of the Escondido-Vista Water Treatment Plant. Water treated here is released into the 14-mile long Vista Flume for delivery to VID's service area.

The Escondido Canal is the most vulnerable link of this transmission system. In October 2003 the Paradise Fire burned 80% of the canal alignment, denuding slopes adjacent to it. The winters of 2004 and 2005 produced considerable siltation and erosion along the canal, with the result that significantly reduced local water deliveries were made despite the abundant availability of local water in 2005.

Finally, the reliability of local water supplies is also subject to the terms of the settlement of a 47 year old lawsuit between five local Indian bands (as plaintiffs) and the City of Escondido and VID (as defendants) over the waters of the San Luis Rey River (refer to subsection 6.3 for more details).

While the present course of settlement negotiations does not suggest a significant reduction in local water production for Escondido or VID, final settlement of these issues has not been attained.

To the extent that local water supplies are insufficient to meet its total water needs for any given year, VID relies on Water Authority supplies to make up the difference. During the years used in the normal (median production 1960 to 2015), single dry year (2015) and multiple dry-year (2013, 2014 and 2015) assessments, the Water Authority was able to provide enough water to meet all demands in VID's service area. Based on information contained in the Water Authority's 2015 Plan, it is anticipated that the Water Authority will be able to meet VID's increased demands during a single-dry water year.

During multiple-dry water years, there is a potential for shortages, if Metropolitan allocates its supplies. If a shortage occurs, the Water Authority plans to utilize carryover storage and regional shortage management measures to fill the shortfall (refer to section 9 of the Water Authority's 2015 Plan for more details.) Summary information regarding the reliability and vulnerability of the Water Authority's and Metropolitan's water supplies is contained subsection 6.1, and more detailed information can be found in each agency's 2015 Plan.

7.2 NORMAL WATER YEAR ASSESSMENT

If Water Authority, Metropolitan and VID supplies are developed as planned and SBX 7-7 conservation targets are achieved, no shortages are anticipated within VID's service area in a normal year through 2040. Table 7-1 shows a normal assessment year.

TABLE 7-1: NORMAL WATER SUPPLY AND DEMAND ASSESSMENT (AF/YR)

	2020	2025	2030	2035	2040
Water Authority Supplies	14,682	16,258	17,567	18,255	19,085
VID Surface Water & Groundwater	5,062	5,062	5,062	5,062	5,062
Total Projected Supply	**19,744**	**21,320**	**22,629**	**23,317**	**24,147**
Total Projected Demand	**19,744**	**21,320**	**22,629**	**23,317**	**24,147**
Surplus/(Shortage)	**0**	**0**	**0**	**0**	**0**

Note: Normal water year data for local water and groundwater supplies are based on median production from 1960 to 2015.

7.3 DRY WATER YEAR ASSESSMENT

In addition to a normal year assessment, the Act requires an assessment to compare supply and demand under single-dry year and multiple-dry water years of the next 20 years in five-year increments. Table 7-2 shows the single dry-year assessment. The projections are based on VID's local supply available in 2015 and information developed by the Water Authority and Metropolitan. The Water Authority's existing and planned supplies from the IID transfer, canal lining projects and seawater desalination projects are considered "drought resilient" supplies as discussed in Section 4 of its 2015 Plan.

For this single dry-year assessment, it was assumed that Metropolitan would have adequate supplies in storage and would not be allocating supplies. With the previous years leading up to the single dry-year being wet or average hydrologic conditions, Metropolitan should have adequate supplies in storage to cover potential shortfalls in core supplies and would not need to allocate.

Based on a statistical evaluation of relevant data (climate factors, including rainfall/run-off, population growth and water demands) from 1995 to 2015, it is estimated that hot-dry weather (absent mandatory water use restrictions) may generate 10% greater demands than during normal years. This percentage was utilized to calculate single-dry and multiple-dry year demands shown in tables 7-2 through 7-7.

If Metropolitan, the Water Authority and VID's water 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 through 2040.VID will use local water resources whenever possible; however, if there is a shortfall, VID will rely on the Water Authority supplies.

TABLE 7-2: SINGLE-DRY WATER SUPPLY AND DEMAND ASSESSMENT (AF/YR)

	2020	2025	2030	2035	2040
Water Authority Supplies	20,100	21,834	23,274	24,031	24,944
VID Surface Water & Groundwater	1,618	1,618	1,618	1,618	1,618
Total Projected Supply	**21,718**	**23,452**	**24,892**	**25,649**	**26,562**
Total Projected Demand	**21,718**	**23,452**	**24,892**	**25,649**	**26,562**
Surplus/(Shortage)	**0**	**0**	**0**	**0**	**0**

In accordance with the Act, Tables 7-3 through 7-7 illustrate multiple-dry water year assessments in five-year increments. VID surface water projections are reflective of supplies available during 2013, 2014 and 2015. The Water Authority supplies consist of the yield from the IID transfer, canal lining projects and Carlsbad Seawater Desalination Projects as well as imported water from Metropolitan. As discussed below, the Water Authority may utilize carryover storage to supplement the aforementioned supplies.

For the multi-dry year reliability analysis, the conservative planning assumption is that Metropolitan will be allocating supplies to its member agencies. As a result, some level of shortage could be potentially experienced under certain circumstances. When shortages occur, the Water Authority will use carryover storage, as discussed in Section 9.3 of its 2015 Plan.

The Water Authority has invested in carryover storage supply capacity, which can be utilized in dry-years to improve reliability. Carryover storage includes both in-region surface water storage at San Vicente Reservoir and out-of-region groundwater storage in California's central valley. These verifiable dry-year storage supplies are described in Section 11 of the Water Authority's 2015 Plan.

In years where shortages may still occur after the utilization of carryover storage, additional regional shortage management measures, consistent with the Water Authority's Water Shortage and Drought Response Plan will be taken to fill the shortfall. These measures could include securing dry-year water transfers and/or the implementation of voluntary or mandatory water use restrictions. During the latest shortage period, VID achieved over a 20% reduction in consumption by implementing mandatory water use restrictions. As discussed in the following subsection, the amount of savings achieved through extraordinary conservation measures could be limited due to demand hardening.

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

TABLE 7-3

	2016	**2017**	**2018**
Water Authority Supplies	17,944	18,761	19,258
VID Surface Water & Groundwater	2,092	1,695	1,618
Total Projected Supply	**20,036**	**20,456**	**20,876**
Total Projected Demand	**20,036**	**20,456**	**20,876**
Surplus/(Shortage)	**0**	**0**	**0**

TABLE 7-4

	2021	**2022**	**2023**
Water Authority Supplies	19,973	20,717	21,141
VID Surface Water & Groundwater	2,092	1,695	1,618
Total Projected Supply	**22,065**	**22,412**	**22,759**
Total Projected Demand	**22,065**	**22,412**	**22,759**
Surplus/(Shortage)	**0**	**0**	**0**

TABLE 7-5

	2026	**2027**	**2028**
Water Authority Supplies	21,648	22,333	22,698
VID Surface Water & Groundwater	2,092	1,695	1,618
Total Projected Supply	**23,740**	**24,028**	**24,316**
Total Projected Demand	**23,740**	**24,028**	**24,316**
Surplus/(Shortage)	**0**	**0**	**0**

TABLE 7-6

	2031	**2032**	**2033**
Water Authority Supplies	22,951	23,499	22,760
VID Surface Water & Groundwater	2,092	1,695	1,618
Total Projected Supply	**25,043**	**25,194**	**24,378**
Total Projected Demand	**25,043**	**25,194**	**25,345**
Surplus/(Shortage)	**0**	**0**	**(967)**

MULTIPLE-DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT (AF/YR) (CONTINUED)

TABLE 7-7

	2036	2037	2038
Water Authority Supplies	23,740	24,320	22,327
VID Surface Water & Groundwater	2,092	1,695	1,618
Total Projected Supply	**25,832**	**26,015**	**23,945**
Total Projected Demand	**25,832**	**26,015**	**26,198**
Surplus/(Shortage)	**0**	**0**	**(2,253)**

NOTE: The potential shortages shown in 2033 and 2038 will be handled through the implementation of management actions, up to and including, mandatory water use restrictions as described in Chapter 8, Water Shortage Contingency Planning.

As stated in the Water Authority's 2015 Plan, the unavailability of any one supply source will be buffered because of the diversity of supplies. In other words, the region is not reliant on a single supply. To replace or supplement existing supplies, the Water Authority could take steps to increase the development of water transfers or seawater desalination. Member agencies with groundwater supplies, like VID, could also maximize their production. In order to adequately plan for potential supply uncertainties and identify alternative sources, the Water Authority's 2015 Plan contains a scenario planning process.

7.4 DEMAND HARDENING

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 during the most recent shortage period. This is due to the concept known as demand hardening. Demand hardening diminishes the ability or willingness of a customer to reduce demands during shortages as a result of having implemented long-term conservation measures. Responsiveness to drought pricing and general price increases will diminish because remaining essential uses are less responsive to price. As noted in the Water Authority's 2015 Plan, this will increase the importance of acquiring supplemental dry-year supplies to eliminate or reduce potential supply shortages.

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CHAPTER 8 WATER SHORTAGE CONTINGENCY PLANNING

The Act requires that urban water suppliers conduct water shortage contingency analyses as part of their 2015 Plan. This section contains VID's analysis, which is based on its Water Supply Response Program (Appendix E) and Emergency Response Plan.

8.1 STAGES OF ACTION

8.1.1 Water Authority Water Shortage and Drought Response Plan

In 2006, the Water Authority Board of Directors adopted the Water Shortage and Drought Response Plan WSDRP, to serve as a comprehensive plan in the event that the region faced supply shortages due to drought or other water shortage conditions. The WSDRP was developed by the Water Authority in coordination with its member agencies to provide a balanced, flexible, systematic approach to identifying regional actions necessary to reduce the impacts from shortages. It includes all aspects of drought planning, from steps to avoid rationing, to drought response stages, allocation methodology, pricing, tracking actual reductions in water use, and a communication strategy. Multiple actions are identified to manage shortage situations, including both supply augmentation measures and demand reductions up to 50 percent in water supply. Extraordinary conservation savings are an essential component of meeting the need for water in a time when available supplies are limited.

The WSDRP is organized into three stages: voluntary supply management, supply enhancement, and mandatory cutbacks including a supply allocation methodology. These stages are summarized in the Drought Response Matrix in Table 8-1.

TABLE 8-1: DROUGHT RESPONSE MATRIX

	STAGES		
Potential Water Authority Drought Actions	**Voluntary**	**Water Authority Supply Enhancement**	**Mandatory Cutbacks**
Ongoing BMP Implementation	✓	✓	✓
Communication Strategy	✓	✓	✓
Monitoring supply conditions and storage levels	✓	✓	✓
Call for voluntary conservation	✓	✓	✓
Draw from Water Authority carryover storage	✓	✓	✓
Secure transfer option contracts	✓	✓	✓
Buy phase 1 spot transfers (cost at below Tier 2 rate)		✓	✓
Call transfer options		✓	✓
Buy phase 2 spot transfers (cost at below Tier 2 rate)		✓	✓
Implement allocation methodology			✓
Utilize Emergency Storage Project Supplies			✓

VID's Water Supply Response Program (Appendix E) contains levels and corresponding actions that will assist VID in meeting conservation targets. Specific water conservation measures implemented during each level are described in subsection 8.4.

8.1.2 Water Authority Allocation Methodology

In the event of mandatory supply cutbacks from Metropolitan, the WSDRP includes a municipal and industrial (M&I) allocation methodology to determine how the Water Authority's available supplies will be equitably allocated to its member agencies. Based on "lessons learned" from implementation of the allocation methodology during the 2007 - 2011 drought management period, the Water Authority and its member agencies worked together to identify specific elements of the methodology that could be modified to improve its future use. These modifications were approved by the Water Authority Board in April 2012 and are incorporated into the WSDRP.

The M&I allocation methodology applies to those customers paying the M&I rate, including residential, commercial, and industrial customers. During an allocation, the actual reduction in member agency deliveries is determined through monthly meter reads, which are compared to the allocation targets for each member agency. This tracking information is then provided in monthly progress reports to the Water Authority Board.

A separate process is used to allocate deliveries under the Transitional Special Agricultural Rate (TSAWR) program, where the supply allocations are based on Metropolitan's cutback level to the Water Authority and Water Authority regional supplies are not available to mitigate the cutback. Under this process, TSAWR demands are met through the supplies allocated from Metropolitan and not supplemented with the Water Authority's regional supplies: Colorado River Transfers; Carlsbad Desalination Project water; any carry-over storage water; and potential dry-year supplies.

8.1.3 VID Shortage Allocation Plan

Although there is no written plan for water allocation during a shortage, VID has created priorities based on its past response during water shortage emergencies. Priorities for use of available potable water during shortages are based on legal requirements as set forth in the California Water Code, Sections 350-358. These are not binding priorities, only general guidelines for water allocation if no regional plan is adopted.

A. Minimum health and safety allocations for interior residential needs (includes single family, multi-family, hospitals and convalescent facilities, retirement and mobile home communities, student housing, and fire-fighting and public safety).
B. Commercial, industrial, institutional/governmental operations (where water is used for manufacturing and for minimum health and safety allocations for employees and visitors), to maintain jobs and an economic base of the community (not for landscape uses).
C. Permanent agriculture (orchards, vineyards, and other commercial agriculture which would require at least five years to return to production) that has not been part of the reduced Transitional Special Agricultural Water Rate (TSAWR) from the Water Authority.

D. Annual agriculture (floriculture, strawberries, other truck crops) that has not been part of the reduced TSAWR from the Water Authority.
E. Existing landscaping.
F. New customers, proposed projects without permits when a shortage is declared.
G. All agricultural customers that have been receiving the reduced TSAWR from the Water Authority.

8.1.4 VID Water Supply Response Program

VID's Water Supply Response Program (Appendix E) describes four potable water supply conditions (levels) under which its customers must take specific actions to reduce quantities of water used. The four levels are shown in Table 8-2. The specific actions required under each level can be found in Sections 4 through 7 of the Water Supply Response Program.

TABLE 8-2: WATER SUPPLY RESPONSE LEVELS

Level	Percent Supply Reduction	Water Supply Condition
1	0	Level 1 applies at all times unless the District Board of Directors has declared another level, per the procedures set forth in the Program.
2	Up to 20%	Level 2 may be declared when 1) the Water Authority notifies its member agencies that due to cutbacks caused by drought or other reduction in supplies, a consumer demand reduction is required in order to have sufficient supplies available to meet anticipated demands; 2) when a consumer demand reduction is required by a regulatory agency; or 3) when other conditions exist that require a consumer demand reduction.
3	Up to 40%	Level 3 may be declared when 1) the Water Authority notifies its member agencies that due to increasing cutbacks caused by drought or other reduction in supplies, a serious water shortage condition exists that requires extensive consumer demand reductions in order to have sufficient supplies available to meet anticipated demands; 2) when a similar requirement is imposed by a regulatory agency; or 3) when other conditions exist that require a serious consumer demand reduction.
4	More than 40%	Level 4 may be declared when 1) the Water Authority Board of Directors declares a water shortage emergency pursuant to California Water Code section 350 and notifies member agencies that Level 4 requires an emergency demand reduction in order for the District to maximize supplies available to meet anticipated demands; 2) when a similar requirement is imposed by a regulatory agency; or 3) when other conditions exist that require a serious consumer demand reduction. **Water conservation measures implemented in Level 4 will have the ability to achieve a water reduction consistent with a 50% reduction in water supply (Water Code section 10632(e)).**

8.2 PROHIBITIONS, CONSUMPTION REDUCTION METHODS AND PENALTIES

VID's Water Supply Response Program (Exhibit E) prohibits various types of water use practices when certain water supply conditions exist. The table below list examples of prohibitions against specific water use practices during specified water supply conditions.

TABLE 8-3: MANDATORY PROHIBITIONS

Examples of Prohibitions	Level when Prohibition becomes Mandatory
Water leaving property as a result of irrigating or failure to repair known leaks	1
Spraying hard surfaces during irrigation	1
Surface irrigation during mid-day hours	1
Watering landscapes 48 hours after it rains	1
Ornamental turf in public street medians	1
Washing down paved surfaces (except to alleviate fire or sanitation hazards)	1
Washing a vehicle with a hose without an automatic shut-off valve	1
Operation of any ornamental fountain without a circulating pump	1
Failure to repair a leak	1
Limit residential and commercial irrigation to assigned days	2
Limit lawn watering and landscape irrigation to established time limits	2
Restrictions on filling/re-filling pools, ornamental lakes and ponds	3
Operating ornamental fountains or water features	3
Washing vehicles except at a commercial carwashes that use re-circulated water	3
No new potable water service; no new temporary (constructions meters) or permanent water meters	3
Landscape irrigation	4

8.3 PENALTIES, CHARGES, OTHER ENFORCEMENT OF PROHIBITIONS

Any customer violating any provision of VID's Water Supply Response Program receives a written warning for the first violation. Subsequent violations (within a "12-month moving year") result in penalties ranging from the assessment of water conservation fees to discontinuance of service. Below is a summary of the actions and corresponding fees associated with violating any provision of the Water Supply Response Program. It is important to note that penalties and charges are adjusted periodically so the amounts shown below are subject to change and have been included for reference purposes only.

- First Violation – Warning
- Second Violation - $204 water conservation fee
- Third Violation - $434 water conservation fee
- Subsequent Violations - $664 water conservation fee; at the Board's discretion, installation of a flow restrictor ($272 – 1" or smaller meter; $517 – 1 1/2" and 2" meters) or discontinuance of service.

NOTE: The water conservation fees and other charges shown above are assessed for violations during the implementation of all levels of the Water Supply Response Program.

8.4 CONSUMPTION REDUCTION METHODS

In addition to specifying prohibitions against water waste, VID's Water Supply Response Program includes methods (many of them the same as prohibitions identified in Table 8-3) for reducing water use when mandatory cutbacks are required. It is anticipated that by implementing the prohibitions and consumption reduction methods identified in the Water Supply Response Program, the targeted reduction levels for each water supply response level can be achieved. Table 8-4 lists key consumption reduction methods used in each drought response level. A combination of these methods will be used to meet the higher consumption reduction levels.

TABLE 8-4: CONSUMPTION REDUCTION METHODS

Consumption Reduction Method	Level When Method Takes Effect	Projected Reduction
Water Use Restrictions (e.g. stop washing down paved surfaces, eliminate irrigation run-off, repair leaks with specified time period, etc.)	1	Up to 10%
Limit residential and commercial landscape irrigation to assigned days and established watering time limits	2	Up to 25%
No new potable water service; no new temporary (constructions meters) or permanent water meters	3	Up to 10%
Water allocations may be implemented for individual properties	3	Up to 20%
Landscape irrigation prohibited	4	Up to 30%

8.5 DETERMINING WATER SHORTAGE REDUCTIONS

Under normal water supply conditions, potable water production figures are recorded daily, and totals are reported to the General Manager and staff on a weekly basis and to the Board of Directors on a monthly basis. During shortages, production figures are reported to the General Manager daily. Other data, such as reservoir levels and system pressures, is also reviewed to monitor progress in achieving required reductions. SCADA real-time data (monitor production and distribution, system pressures and reservoir levels) and individual water meter reads are all used by VID to measure water use reductions. Table 8-5 summarizes the mechanism used by VID to monitor water use reductions.

TABLE 8-5: WATER USE MONITORING MECHANISMS

Mechanism for Determining Actual Reductions	Type and Quality of Data Expected
Monitor daily production and distribution records	SCADA real-time data
Monitor system pressures – peak demand periods	SCADA real-time data
Monitor reservoir levels – peak demand periods	SCADA real-time data

8.6 REVENUE AND EXPENDITURE IMPACTS

VID has taken several steps to reduce revenue and expense impacts resulting from water shortages. The District has implemented a three-tiered water rate structure to encourage water use efficiency and conservation during normal and shortage conditions (see section 9.2 for more details regarding the tiered rate structure).

VID has a Working Capital Reserve that was established to cover operating revenue and expense variances, including reduced water sales. In the event of a prolonged drought and mandatory water use reductions, funds from this reserve could be used to help offset a severe increase in the water rate as a result of decreased water sales. If necessary, VID could also use funds from its Capital Improvement Reserve to stabilize rates.

Due to large fluctuations in the production of local water as a result of changing climatic or operational conditions, VID is constantly exposed to large swings in the cost of purchasing imported water. In June 2005, the VID Board created the Water Purchase Stabilization Reserve to accumulate the necessary funding during wet years to help offset the financial burden sustained during dry years. In wet years when local water production is in excess of its historical average, the Stabilization Reserve is funded by transferring the value of the excess local water. In years that local water production is less than the historical average, a transfer of funds equal to the current cost of purchasing raw imported water would be made from the Reserve in order to avoid an increase in water rates.

8.7 WATER SUPPLY RESPONSE PROGRAM RESOLUTION

VID's Water Supply Response Program, which specifies water conservation measures as well as consumption reduction methods to be implemented during a water shortage, is included as Appendix E to this document.

8.8 CATASTROPHIC SUPPLY INTERRUPTION PLAN

VID uses its Emergency Response Plan (ERP), based on the Standard Emergency Management Systems (SEMS) guidelines and, if necessary, Water Supply Response Program in responding to natural disasters and other events that interrupt potable water service to its customers.

VID's plan is consistent with provisions in the County of San Diego's (County) Emergency Response Plan. The ERP contains procedures for the distribution of potable water in a disaster; these procedures are consistent with guidelines prepared by the California State Office of Emergency Services.

The County plan recommends the following: (1) the purchase of water purification equipment; (2) purchase of standby generators and auxiliary pumps; and (3) construction of emergency water conveyance and supply storage facilities. Because of the need for additional emergency water storage, the Water Authority has been constructing countywide emergency supply storage facilities.

In addition, specific water-critical customers (such as hospitals, nursing facilities, and schools) have been identified. Likely potable water distribution sites have been pinpointed. Standby procurement documents have been developed for emergency bulk purchases of bottled water. Treatment stations, when operating, are inspected daily. When not in operation, treatment stations, pumping plants and storage distribution reservoirs are monitored through VID's

Supervisory Control and Data Acquisition (SCADA) system with level, intrusion and other operating alarms. Computers monitor these systems 24 hours a day, seven days a week.

VID recognizes the importance of Best Management Practices (BMP's) described in Chapter 9 in reducing water demand and will continue to implement conservation programs in an emergency. Also, VID will increase media attention to the water supply situation during a shortage and will step up public water education programs, encourage property owners to apply for a landscape and interior water use survey and continue to advertise the importance of customers installing water efficient plumbing fixtures and appliances.

Table 8-6 summarizes the actions that VID has taken to prepare itself for responding to various natural or man-made disasters.

TABLE 8-6: PREPARATION ACTIONS FOR CATASTROPHE

Possible Catastrophe	Summary of Actions
Regional Power Outage	Preparation of ERP and Water Supply Response Program; staff training and exercises; procurement of standby generators and auxiliary pumps; identification of key water-critical customers; public agency and media contact list; alternative communication system; implementation of SCADA to monitor treatment stations, pumping plants and storage distribution reservoirs; short-term exchange and transfer agreements with neighboring water agencies and mutual assistance agreement.
Natural Disasters - Earthquake, Flood and Storms	Preparation of ERP and Water Supply Response Program; staff training and exercises; procurement of standby generators and auxiliary pumps; standby procurement documents for the emergency purchase of bottled water and other equipment and supplies; identification of key water-critical customers; public agency and media contact list; alternative communication systems; implementation of SCADA to monitor treatment stations, pumping plants and storage distribution reservoirs; short-term exchange and transfer agreements with neighboring water agencies and mutual assistance agreement.
Imported Water Supply Failure	Preparation of ERP and Water Supply Response Program; staff training and exercises; procurement of standby generators and auxiliary pumps; identification of key water-critical customers; public agency and media contact list; implementation of SCADA to monitor treatment stations, pumping plants and storage distribution reservoirs; short-term exchange and transfer agreements with neighboring water agencies and mutual assistance agreement.
Contamination	Preparation of ERP and Water Supply Response Program; staff training and exercises; procurement of standby generators and auxiliary pumps; standby procurement documents for the emergency purchase of bottled water and other equipment and supplies; identification of key water-critical customers; public agency and media contact list; alternative communication systems; implementation of SCADA to monitor treatment stations, pumping plants and storage distribution reservoirs; short-term exchange and transfer agreements with neighboring water agencies and mutual assistance agreement.
Structural Failure – Storage Facilities and Pump Stations	Preparation of ERP and Water Supply Response Program; staff training and exercises; procurement of standby generators and auxiliary pumps; standby procurement documents for the emergency purchase of bottled water and other equipment and supplies; identification of key water-critical customers; public agency and media contact list; alternative communication systems; implementation of SCADA to monitor treatment stations, pumping plants and storage distribution reservoirs; short-term exchange and transfer agreements with neighboring water agencies and mutual assistance agreement.

8.9 MINIMUM SUPPLY NEXT THREE YEARS

Table 8-7 provides an estimate of the minimum water supply available during each of the next three years, 2016 through 2018. To the extent that local water supplies are insufficient to meet its total water needs for a given year, VID relies on Water Authority water supplies to make up the difference. Information regarding the Water Authority's minimum water supplies over the next three years is contained in Section 11 of its 2015 Plan.

TABLE 8-7: MINIMUM SUPPLY NEXT THREE YEARS (AF/YR)

	2016	2017	2018
Water Authority Supplies	17,944	18,761	19,258
VID Surface Water & Groundwater	2,092	1,695	1,618
Total Projected Supply	**20,036**	**20,456**	**20,876**

CHAPTER 9 DEMAND MANAGEMENT MEASURES

Water conservation is an integral part of VID's plan to meet future water demands as well as the requirements of SBX 7-7. VID is a signatory to the Memorandum of Understanding (MOU) with the California Urban Water Conservation Council (CUWCC) regarding Best Management Practices (BMPs). As a signatory, VID is required to submit biannual BMP reports to the CUWCC detailing the implementation of water conservation efforts undertaken by the District.

VID has included its annual activity reports to satisfy the requirements of subsections (f) of Water Code 10631 regarding Demand Management Measures (DMMs), as permitted by the Act. The activity reports for reporting years 2013 and 2014 are attached as Appendix D, and describe the present and future implementation conditions and schedule for BMPs. As shown on the activity reports, VID is on track with its coverage requirements and in compliance with the MOU.

9.1 VID Conservation Program

VID started its water conservation program in 1981. Early program efforts were oriented toward a long-term public information program and cooperation with the regional water conservation programs of Water Authority. VID recognizes water conservation as a priority in its water use planning. The long-term goal of VID's water conservation program is to achieve maximum efficiency for various beneficial water uses. Specific objectives of VID's conservation policy are the elimination of wasteful or inefficient practices in water use, the continued development and dissemination of information on both current and potential water conservation practices, and the on-going implementation of conservation practices.

VID's water conservation program is based on VID doing what it is most suited to accomplish within its service area. As such, VID pursues water conservation activities that are specific and local in nature while leaving the large-scale and regional water conservation programs to the appropriate regional water purveying agency.

9.2 Elements of VID's Conservation Programs

Participation in Metropolitan's and Water Authority's Regional Conservation Programs

A number of conservation activities are implemented at a regional level by the Metropolitan and Water Authority. A description of those activities is provided in Appendix D: the California Urban Water Conservation Council (CUWCC) Best Management Practices (BMP) Annual Reports for 2013 and 2014.

Implementation of Conservation Best Management Practices

The activity reports for reporting years 2013 and 2014 (Appendix D) describe present and future implementation conditions and schedules for BMPs. VID has selected the gallons per capita per day (GPCD) approach to BMP compliance. This approach requires the District to

implement all of the foundational BMPs and meet a GPCD target (18% reduction by 2018). As shown in section 5.2, 2015 Compliance Daily per Capita Water Use, VID's 2015 GPCD is 125 which is less than its 2018 GPCD target of 143 (refer to GPCD included Appendix D for details). It is anticipated that VID will be able to achieve required conservation savings through the implementation BMPs.

Economic and Financial Incentives

VID has implemented a three-tiered water rate structure to encourage water use efficiency and conservation during normal and shortage conditions. The tier 3 water rate is only imposed during times of water delivery cutbacks by the Water Authority. When no water delivery cutbacks are imposed by the Water Authority, tier 3 water use is billed at the tier 2 water rate.

The District's three-tiered water rate structure is based on meter size and applied to all customer classes. The tier thresholds for each meter size are different but the cost per unit in each tier remains the same. Table 9-1 shows the relationship between meter size and the monthly allotment in each tier as well as the current cost per unit (748 gallons). It is important to note that water rates are adjusted periodically so the amounts shown in the table are subject to change and have been included for reference purposes only.

TABLE 9-1: TIERED WATER RATE SCHEDULE

Meter Size	Tier 1 - $4.04/unit	Tier 2 - $4.58/unit	Tier 3 - $5.77/unit
5/8"	0-7	8-42	43+
¾" & ¾"X1"	0-10	11-60	61+
1"	0-25	26-150	151+
1 ½"	0-50	51-300	300+
2"	0-80	81-480	481+
3"	0-160	161-960	961+
4"	0-250	251-1,500	1,501+
6"	0-500	501-3,000	3,000+
8"	0-800	801-4,800	4,801+
10"	0-1,150	1,151-6,900	6,901+

To assist customers with reducing their water consumption, VID offers financial incentives for residential customers to replace their old washing machines with high efficiency clothes washers and to install weather-based irrigation controllers. Commercial, industrial and institutional customers are also eligible to receive rebates on a range of water efficient devices (e.g. commercial high-efficiency toilets, cooling tower conductivity controllers, etc.). These incentive programs are described in the CUWCC BMP activity reports attached as Appendix D.

Water Use Regulation through Ordinances and Resolutions

VID adopted Ordinance No. 90-01 in 1990 that prohibited wasteful practices, such as gutter flooding, sidewalk and driveway washing, etc. The ordinance, which was updated in 2001 and

2002, was repealed and ultimately replaced by Resolution No. 15-21, also known as the Water Supply Response Program (Appendix E). Non-compliance with provisions of the Water Supply Response Program is enforced through a violation process which is detailed in Section 9 of the resolution.

Since 1990, VID has issued nearly 1,300 warning/violation notices. Water used in violation of the Water Supply Response Program may result in the assessment of a Water Conservation Fee. The District enforces water use restrictions identified in each Water Supply Response Program level.

The cities of Escondido, Oceanside, San Marcos and Vista and the County of San Diego have either adopted their own water efficient landscape ordinance or operate under the State of California's model water landscape efficient ordinance approved on July 15, 2015.

Public Relations and Community Education Programs

A description of public relations and community education activities is provided in Appendix D, which contains the CUWCC BMP activity reports for 2013 and 2014.

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CHAPTER 10 – PLAN ADOPTION, SUBMITTAL AND IMPLEMENTATION

10.1 INCLUSION OF ALL 2015 DATA

VID's 2015 Plan includes water use and planning data for fiscal year 2015. As such, the 2015 Plan was completed after close of fiscal year 2015 (June 30, 2015).

10.2 NOTICE OF PUBLIC HEARING

10.2.1 Notice to Cities and Counties

In accordance with the Act, VID notified cities and the county within its service area sixty (60) days prior to the public hearing that it was preparing a 2015 Plan. Notice of the public hearing and copies of the draft 2015 Plan (on CD) were sent to cities and the county of San Diego. Table 10-1 lists the cities and county that received the sixty (60) day notice as well as the notice of public hearing. Copies of the plan preparation and public hearing notices are included in Appendix B.

TABLE 10-1: NOTIFICATION TO CITIES AND COUNTIES

City/County Name	60 Day Notice	Notice of Public Hearing
City of Vista	✔	✔
City of Escondido	✔	✔
City of San Marcos	✔	✔
City of Oceanside	✔	✔
County of San Diego	✔	✔

10.2.2 Notice to the Public

Per Water Code Section 10642, VID's draft 2015 Plan was made available for public inspection at its office. Additionally, an electronic copy of the draft 2015 Plan was made available for review on VID's website. VID published a notice of public hearing in the newspaper pursuant to the requirements set forth in Government Code Section 6066. A copy of the public hearing notice is included in Appendix B.

10.3 PUBLIC HEARING AND ADOPTION

In accordance with the Act, the Water Conservation Act of 2009 (SBX 7-7) and Government Code Section 6066, the VID Board of Directors held a public hearing on June 22, 2016 at 8:30 AM and adopted the 2015 Plan following the closure of said public hearing. As stated in its public hearing notice, VID encouraged the active involvement of the diverse social, cultural, and economic elements of the population within its service area. Copies of resolution adopting the 2015 Plan and minutes from the June 22, 2016 meeting are included in Appendix B.

10.4 PLAN SUBMITTAL

Within 30 days of adoption, copies of the final 2015 Plan will be submitted to DWR electronically and a CD will be mailed to the California State Library, cities within VID's service area and the County of San Diego.

10.5 PUBLIC AVAILABILITY

Once the 2015 Plan has been submitted to DWR, it will be posted to VID's website and be made available in hardcopy at VID's office during normal business hours.

10.6 PLAN IMPLEMENTATION

The programs and policies set forth in the 2015 Plan will be implemented to assist VID in meeting conservation goals stated in SBX 7-7 and balance available water supplies with demands. VID has and will continue to implement water demand management measures as planned and shown in the California Urban Water Conservation Council Best Management Practices annual reports included as appendices to the 2015 Plan. VID will also continue to work with the North San Diego Water Reuse Coalition to explore ways to re-commission the Shadowridge Water Reclamation Plant and/or bring recycled water to VID's service area.

VID plans, designs, and constructs water system facilities to meet projected ultimate demands to be placed upon the potable water system. Also, as documented in previous UWMPs, VID forecasts needs and plans for water supply requirements to meet projected demands at ultimate build out. The water facilities are constructed when development activities require them for adequate cost effective water service. VID continues to implement projects identified in its Potable Water Master Plan based on system demands.

APPENDIX A

Urban Water Management Planning Act

Senate Bill 7 of the Seventh Extraordinary Session (SBX 7-7)
(Water Conservation Act of 2009)

Methodologies for Calculating Baseline and Compliance per Capita Water Use

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California Water Code
Urban Water Management Planning

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 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.

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California Water Code
Sustainable Water Use and Demand Reduction

California Water Code Division 6, Part 2.55.

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 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.

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Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use

(For the Consistent Implementation of the Water Conservation Act of 2009)

February 2016

FINAL DRAFT

California Department of Water Resources
Division of Statewide Integrated Water Management
Water Use and Efficiency Branch

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State of California
Edmund G. Brown Jr., Governor

California Natural Resources Agency
John Laird, Secretary for Natural Resources

Department of Water Resources
Mark W. Cowin, Director

Carl Torgersen, Chief Deputy Director

Cindy Messer, Assistant Chief Deputy Director

Waiman Yip, Policy Advisor

Gary B. Bardini
Deputy Director

William A. Croyle
Deputy Director

John Pacheco
Deputy Director

Katherine S. Kishaba
Deputy Director

Cathy Crothers, Chief Counsel

Ed Wilson, Assistant Director, Public Affairs Office

This report was prepared under the direction of
Division of Statewide Integrated Water Management
Kamyar Guivetchi, Manager

By

Water Use and Efficiency Branch
Diana S. Brooks, Chief

Assisted by

Peter Brostrom.....Land and Water Use Program Manager I
Vicki Lake ..... Senior Environmental Scientist (Supervisor)
Gwen Huff.....Senior Environmental Scientist
Nirmala Benin ..... Senior Engineer

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Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use was written with the assistance of the following consultants:

Stephen Hatchett, Senior Economist, CH2M HILL
Brian Van Lienden, Water Resources Engineer, CH2M HILL
Anil Bamezai, Principal, Western Policy Research
David Mitchell, Economist, M.Cubed

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Ernesto Avila
California Urban Water Agencies

Tim Barr
Western Municipal Water District

Joe Berg
Municipal Water District of Orange County

Tim Blair
Metropolitan Water District

David Bolland
Association of California Water Agencies

Lisa Brown
City of Roseville

Heather Cooley
Pacific Institute

Mary Lou Cotton
Kennedy/Jenks Consultants

Jerry De La Piedra
Santa Clara Valley Water District
Edwin de Leon
Golden State Water Company

Chris Dundon
Contra Costa Water District

Penny Falcon
Los Angeles Dept of Water & Power

Sharon Fraser
El Dorado Irrigation District

Luis Generoso
City of San Diego

William Granger
Otay Water District

Richard Harris
East Bay Municipal Utility District

Jack Hawks
California Water Association

Bob Kelly
Suburban Water Systems

Dave Koller
Coachella Valley Water District

Nora Laikam
City of Fresno

Matthew Lyons
Long Beach Water Department

Paul Selsky
Brown and Caldwell

Henry McLaughlin
City of Fresno

Jim Metropulos
Sierra Club

John Mills
Offices of John S. Mills

Lisa Morgan-Perales
Inland Empire Utilities Agency

Daniel Muelrath
City of Santa Rosa

Ron Munds
City of San Luis Obispo

Tom Noonan
Ewing Irrigation

Loren Oki
University of California, Davis

Edwin Osann
Natural Resources Defense Council

Toby Roy
San Diego County Water Authority

Fiona Sanchez
Irvine Ranch Water District

Bob Wilkinson
University of California, Santa Barbara

John Woodling
Sacramento Regional Water Authority

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Introduction

This is the third revision of the Methodologies for Calculating Baseline and Compliance Urban per Capita Water Use. The document was first released in October 2010 and then revised in February 2011 with the addition of the Provisional Method 4 for Determining Water Use Targets as Appendix C. This revision includes Methodology 8: Criteria for Adjustments for Compliance Daily per Capita Water Use and removes the former Appendix A: Alternative Methodology for Service Area Population. Methodology 8 was not included in the earlier versions of the Methodologies as it was not required for the completion of the 2010 urban water management plans and more time was needed to thoroughly develop the methodology. The former Appendix A provided instructions for using the Census Bureau's website to calculate service area population using a person per connection approach. The Census Bureau has revised its website and the links in the former document are no longer valid. Additionally, as part of its guidance for the 2015 UWMPs, DWR has included a population mapping tool as part of the on-line urban water management plan data submittal website. The population mapping tool provides a simpler and streamlined approach to estimating service area population.

In developing Methodology 8, DWR received input and guidance from the Urban Stakeholder Committee and the weather normalization subcommittee. Nine stakeholder meetings and seven subcommittee meetings were held starting in January of 2013 to discuss the development of the methodology and other topics. In 2010, DWR held two public listening sessions, five public stakeholder meetings, and two public workshops to receive comment, input and guidance in developing the first and second versions of the methodologies.

Background documents, stakeholder meeting summaries and public comments related to the development of these methodologies are available at the Water Conservation Act of 2009 website: http://www.water.ca.gov/wateruseefficiency/sb7/

Or contact:

SBX7-7 Urban Water Conservation Program Manager
Water Use and Efficiency Branch
Department of Water Resources, 1416 Ninth Street, Sacramento CA 95814

Background

In February 2008, Governor Arnold Schwarzenegger introduced a seven-part comprehensive plan for improving the Sacramento-San Joaquin Delta. A key component of his plan was a goal to achieve a 20 percent reduction in per capita water use statewide by the year 2020. The governor's inclusion of water conservation in the Delta plan emphasizes the importance of water conservation in reducing demand on the Delta and in reducing demand on the overall California water supply. In response to Schwarzenegger's call for statewide per capita savings, the Department of Water Resources (DWR) and the State Water Resources Control Board convened the 20x2020 Agency Team on Water Conservation. DWR released a draft 20x2020 Water Conservation Plan in April 2009 and the final 20x2020 Water Conservation Plan in February 2010. The water conservation plan developed estimates of statewide and regional baseline per capita water use and outlined recommendations to the governor on how a statewide per capita water use reduction plan could be implemented.

In November 2009, SBX7-7, The Water Conservation Act of 2009, was signed into law as part of a comprehensive water legislation package. The Water Conservation Act addresses both urban and agricultural water conservation. The urban provisions reflect the approach taken in the 20x2020 Water Conservation Plan. The legislation sets a goal of achieving a 20-percent statewide reduction in urban per capita water use and directs urban retail water suppliers to set 2020 urban water use targets. The Water Conservation Act of 2009 directs DWR to develop technical methodologies and criteria to ensure the consistent implementation of the Act and to provide guidance to urban retail water suppliers in developing baseline and compliance water use. To meet the legislative directives for consistent implementation, DWR has developed and published Methodologies for Calculating Baseline and Compliance Year Per Capita Water Use.

Overview of Methodologies, Water Use Targets, and Reporting

The Water Conservation Act of 2009 was incorporated into Division 6 of the California Water Code, commencing with Section 10608 of Part 2.55. All quotations of the Water Code in this report are from sections added by this legislation, unless otherwise noted.

The methodologies, water use targets, and reporting apply to urban retail water suppliers that meet a threshold of number of end users or annual volume of potable water supplied. Section 10698.12 (p) defines the water suppliers affected:

> *"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.*

This overview summarizes the process that urban retail water suppliers must follow and the options they have for complying with the legislation.

Methodologies

The legislation specifically calls for developing seven methodologies and a set of criteria for adjusting daily per capita water use at the time compliance is required (the 2015 and 2020 compliance years) under Section 10608.20(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.*

Sections 10608.20 and 10608.28 of the Water Code allow water suppliers the choice of complying individually or regionally by mutual agreement with other water suppliers or regional agencies. DWR has also developed a methodology for regional compliance.

The following methodologies are included in this report:

- Methodology 1: Gross Water Use
- Methodology 2: Service Area Population
- Methodology 3: Base Daily Per Capita Water Use

- Methodology 4: Compliance Daily Per Capita Water Use
- Methodology 5: Indoor Residential Use
- Methodology 6: Landscaped Area Water Use
- Methodology 7: Baseline Commercial, Industrial, and Institutional (CII) Water Use
- Methodology 8: Criteria for Adjustments to Compliance Daily Per Capita Water Use
- Methodology 9: Regional Compliance

The methodologies provide specific guidance to water suppliers on how to calculate baseline, target, and compliance-year water use. Each methodology defines how its calculations are to be used, with direct reference to the applicable section of the Water Code.

Each methodology describes the calculations, data needed, and, where applicable, optional steps and alternative approaches that water suppliers may use depending on their specific circumstances.

The methodologies for indoor residential water use; landscaped area water use; and baseline CII water use (Methodologies 5, 6, and 7) apply only to urban retail water suppliers who use Method 2 (see Water Use Targets below) to set water use targets.

Baseline Water Use

Water suppliers must define a 10- or 15-year base (or baseline) period for water use that will be used to develop their target levels of per capita water use. Water suppliers must also calculate water use for a 5-year baseline period, and use that value to determine a minimum required reduction in water use by 2020. The longer baseline period applies to a water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water. Methodology 3: Base Daily Per Capita Water Use describes the calculations.

Water Use Targets

An urban retail water supplier, as defined above, must set a 2020 water use target and a 2015 interim target using one of four methods. Three of these are defined in Section 10608.20(a)(1), with the fourth developed by DWR by the end of 2010. The 2020 water use target will be calculated using one of the following four methods:

- Method 1: Eighty percent of the water supplier's baseline per capita water use
- Method 2: Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscaped area water use; and CII uses
- Method 3: Ninety-five percent of the applicable state hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservation Plan
- Method 4: An approach developed by DWR and reported to the Legislature in February 2011 (included as Appendix B)

The target may need to be adjusted further to achieve a minimum reduction in water use regardless of the target method (this is explained in Methodology 3). The Water Code directs that water suppliers must compare their actual water use in 2020 with their

calculated targets to assess compliance. In addition, water suppliers will report interim compliance in 2015 as compared to an interim target (generally halfway between the baseline water use and the 2020 target level). The years 2015 and 2020 are referred to in the methodologies as compliance years. All baseline, target, and compliance-year water use estimates must be calculated and reported in gallons per capita per day (GPCD).

Water suppliers have some flexibility in setting and revising water use targets:

- A water supplier may set its water use target and comply individually, or as part of a regional alliance (see Methodology 9: Regional Compliance).
- A water supplier may revise its water use target in its 2015 urban water management plan or in an amended plan.
- A water supplier may change the method it uses to set its water use target and report it in a 2010 amended plan or in its 2015 urban water management plan. Urban water suppliers are not permitted to change target methods after they have submitted their 2015 UWMP.

Data Reporting

DWR will collect data pertaining to urban water use targets through three documents: (1) through the individual supplier urban water management plans; (2) through the regional urban water management plans; and (3) through regional alliance reports.

Water suppliers that comply individually must report the following data in their urban water management plans (applicable urban water management plan dates are included in parentheses).

- Baseline Gross Water Use and Service Area Population (2010, 2015, 2020)
- Individual 2020 Urban Water Use Target (2010, 2015, 2020) and Interim 2015 Urban Water Use Target (2010)
- Compliance Year Gross Water Use (2015 and 2020) and Service Area Population (2010, 2015, 2020)
- Adjustments to Gross Water Use in the compliance year (2015, 2020)
- Water suppliers who choose Target Method 2 also must provide Landscaped Area Water Use and Baseline CII Water Use data (2010, 2015, and 2020).
- Water Suppliers who choose Target Method 4 must provide the components of calculation as required by Target Method 4. Appendix C describes Target Method 4 and the regional compliance reporting that applies to that method (2010, 2015, and 2020).

Water suppliers that comply regionally must fulfill additional reporting requirements. These are described in greater detail in Methodology 9: Regional Compliance.

Consequences if Water Supplier Does Not Meet Water Use Targets

Each urban retail water supplier, as defined above, must comply by establishing 2015 and 2020 water use targets, demonstrating that its water use is in compliance with its targets, and reporting water use baselines, targets, compliance year water use, and supporting data in its urban water management plan. Section 10608.56 (a) states that a water supplier not in compliance will not be eligible for water grants or loans that may be administered by DWR or other state agencies:

> *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.*

Two exceptions to this are allowed. Section 10608.56 (c) states that a water supplier shall be eligible for a water loan or grant if it "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."

Section 10608.56 (e) states that a water supplier can also be eligible for a water loan or grant if it "has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community."

Methodology 1: Gross Water Use

Definition of Gross Water Use

Section 10608.12(g) of the Water Code defines "Gross Water Use" as:

> *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*

Calculation of Gross Water Use

Gross Water Use is a measure of water supplied to the distribution system over 12 months and adjusted for changes in distribution system storage and deliveries to other water suppliers that pass through the distribution system. Recycled water deliveries are to be excluded from the calculation of Gross Water Use. Water delivered through the distribution system for agricultural use may be deducted from the calculation of Gross Water Use. Under certain conditions, industrial process water use also may be deducted from Gross Water Use.

The methodology for calculating Gross Water Use broadly follows American Water Works Association (AWWA) Manual M36 guidance for calculating Distribution System Input Volume.[1] Calculating Gross Water Use entails 12 basic steps, two of which are optional.[2]

Step 1: Define the 12-month Calculation Period

Gross Water Use shall be calculated over a continuous 12-month period. This period can be based on the calendar year or the utility's fiscal year.[3] The same 12-month period must be used in calculations of Gross Water Use for determining Base Daily Per Capita Water Use and Compliance Daily Per Capita Water Use.

[1]American Water Works Association, Manual of Water Supply Practices – M36: Water Audits and Loss Control Programs, 3rd Edition, 2009. M36 defines Distribution System Input Volume as the volume of water entering the distribution system to provide service to customers. It is equal to the water volume derived from the water utility's own source waters, plus water imported or purchased, plus or minus the net change in water storage (if applicable and significant).
[2]AWWA Manual M36 contains several forms and worksheets that retail urban water suppliers can use to compile and organize data required to calculate Gross Water Use.
[3]As stipulated in paragraph (1) of subdivision (a) of Section 10608.20 of SBX7-7.

Step 2: Delineate Distribution System Boundary

Water supply systems can be broadly subdivided between the transmission systems that convey large amounts of water to local storage reservoirs or treatment plants, and the distribution systems that supply water to residential, commercial, industrial, and public uses such as fire safety. Water distribution systems generally comprise large networks of pipes with complex branched and loop topologies with multiple flow paths to many delivery points.[4] In some systems, some retail customers receive water for municipal and industrial (M&I) uses directly from transmission canals and pipes, in which case the retail water supplier may treat the sections of the transmission canals and pipes delivering water to the retail M&I customers as part of its distribution system. However, transmission canals and pipelines not used for delivering water directly to retail customers should not be included as part of the distribution system.

Wherever possible, distribution system boundary limits should be defined by points of metering or measurement[5] of the water supply. Typical measurement locations for distribution include exit points for treatment plants, treated water reservoirs, wells feeding directly into the distribution system, and imported water entering directly into the distribution system. A schematic of a typical urban retail water supply system is shown in Figure 1; actual distribution systems may vary greatly in configuration. Therefore, each urban retail water supplier must define and delineate its distribution system for purposes of calculating Gross Water Use. The rules for defining and delineating the distribution system boundary must be applied consistently in the base period and compliance years.[6]

Step 3: Compile Water Volume from Own Sources

The water supplier's own sources of supply entering the distribution system shall be identified and tallied. For systems that provide only treated water, this may consist mostly or entirely of water entering the distribution system from treatment plants (as in Figure 1). It may also include water from wells or other sources controlled by the water supplier that directly supply the distribution system (as in Figure 1).

Recycled water, as defined in subdivision (m) of Section 10608.12, directly entering the distribution system shall be excluded from the tally of own sources. Step 8 addresses how to account for recycled water indirectly entering the distribution system through potable reuse.

Measurement records for each source shall be compiled into annual volumes. AWWA's M36 manual or other appropriate references should be consulted in situations where water sources are unmetered or the water meters have not been routinely calibrated. Volumes for each source shall be reviewed and corrected for known errors that may exist in the raw

[4] http://censam.mit.edu/news/posters/whittle/1.pdf

[5] Measurements of unmetered agricultural and raw water deliveries must, at a minimum, meet an accuracy standard of +/- 6% by volume, as defined in the U.S. Bureau of Reclamation, Mid-Pacific Region's "2008 Conservation and Efficiency Criteria". Metered deliveries of M&I water must meet the measurement accuracy and calibration standards described in American Water Works Association Manual M6.

[6] For guidance on situations in which the distribution system boundary changed during the base period, see Methodology 3: Base Daily Per Capita Water Use. For situations in which the distribution system boundary changed during the compliance period, see Methodology 4: Compliance Daily Per Capita Water Use.

measurement data. Uncorrected metered volumes shall be adjusted based on the registration accuracy of the meter, as follows:[7]

$$\text{metered volume correction} = \frac{\text{uncorrected metered volume}}{\text{registration accuracy expressed as a decimal}} - \text{uncorrected meter volume}$$

Step 4: Compile Imported Water Volume

Outside sources of finished water imported directly into the distribution system shall be identified and tabulated, excluding the following:

- Recycled water, as defined in subdivision (m) of Section 10608.12, imported from another water supplier
- Imported raw water passing through the urban retail water supplier's treatment plants, if that water has already been counted under Step 3 (as in Figure 1)

The raw measurement data shall be corrected for known errors in the same manner as for own source water.[8]

Step 5: Compile Exported Water Volume

Any water volumes sent through the distribution system to another water utility or jurisdiction shall be identified and tabulated. Recycled water, as defined in subdivision (m) of Section 10608.12, exiting the distribution system shall be excluded from the tabulation.[9]

Bulk water exports that do not pass through the distribution system also shall not be counted. The raw metering data shall be corrected for known errors in the same manner as for own source and imported water.

Step 6: Calculate Net Change in Distribution System Storage

If distribution system storage is greater at the end of the year than at the beginning, it indicates that water has entered the distribution system but has not been delivered to customers. This water would have been counted in Steps 3 and 4, but because it has not been delivered to customers, it must be deducted from the calculation of Gross Water Use.

Conversely, a decrease in end-of-year distribution system storage indicates that water has been drawn from storage to meet customer demands. This water would not have been counted in Steps 1 and 2, and therefore must be added to the calculation of Gross Water Use. Note that these calculations apply only to storage in the distribution system. Do not include changes in storage outside the distribution system. If the change in distribution system storage is expected to be insignificant, or if data needed to calculate the change in distribution system storage are not available, the water supplier may forgo this step.

[7] AWWA Manual M36 should be consulted if additional guidance on correcting raw meter data for meter registration inaccuracy is needed. Meters with errors exceeding AWWA standards should be recalibrated, repaired, or replaced.

[8] Generally, bulk water sale meters are routinely monitored for accuracy because they provide the basis for payment between the wholesaler and retailer.

[9] It is necessary to subtract recycled water exiting the system only if it was included in the tabulations of water entering the distribution system performed in Steps 3 and 4. However, the easiest way to handle recycled water directly entering the distribution system in the calculation of Gross Water Use is to exclude it entirely from each calculation step.

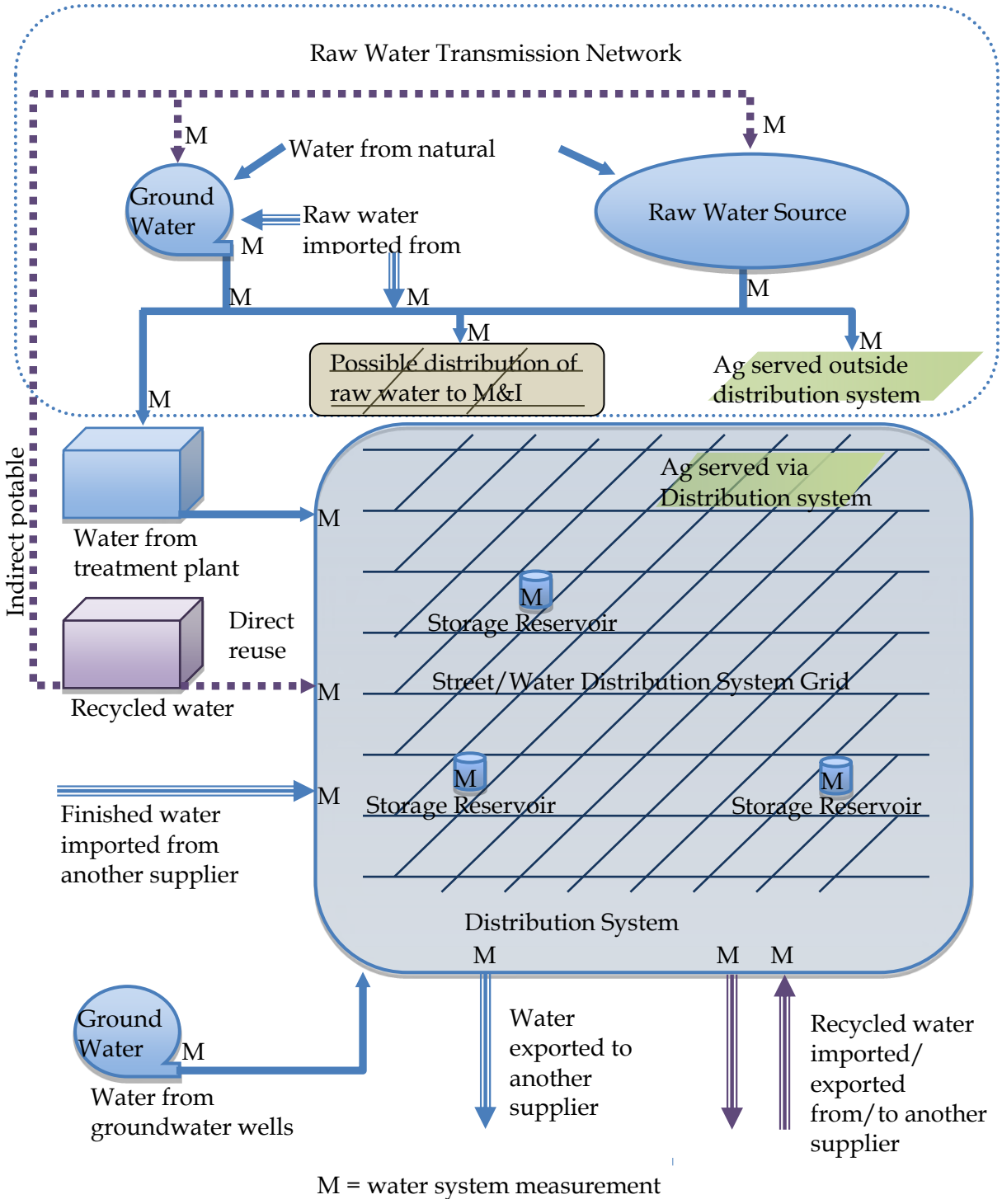

FIGURE 1 URBAN RETAIL WATER SUPPLIER SYSTEM SCHEMATIC[10]

[10]Figure 1 provides a general depiction of all of the elements that may affect the calculation of Gross Water Use. Not all of these elements may be present in a particular water system, nor is it expected that Figure 1 will accurately characterize a particular system configuration.

Step 7: Calculate Gross Water Use before Indirect Recycled Water Use Deductions

Gross Water Use before Indirect Recycled Water Use Deductions equals the volume of water from own sources entering the distribution system determined in Step 3, plus the volume of water from imported water sources entering the distribution system determined in Step 4, less the volume of water delivered via the distribution system to other utilities determined in Step 5, less the net change in distribution system storage determined in Step 6.[11] Table 1 provides an example calculation.

Step 8: Deduct Recycled Water Used for Indirect Potable Reuse from Gross Water Use

This step is necessary only if the urban retail water supplier uses recycled water (as defined in Subdivision (m) of Section 10608.12) to supplement raw surface or groundwater for indirect potable reuse. The Step 8 deduction requires the urban retail water supplier to estimate the amount of recycled water indirectly entering the distribution system through a surface or groundwater source (as in Figure 1).[12] This calculation requires three steps: (1) estimate the amount of recycled water used to supplement a surface reservoir source of supply, (2) estimate the amount of recycled water in extracted groundwater sources of supply, and (3) adjust these volumes for losses during transmission and treatment before the water enters the distribution system.

1. **Estimate recycled water used for surface reservoir augmentation.** The allowable deduction depends on the recycled water blend percentage in the surface reservoir water entering the potable water treatment plant. For example, if the raw surface water source is 95 percent fresh water and 5 percent recycled water, no more than 5 percent of the volume from this water source can be deducted from Gross Water Use calculated in Step 7. If the blend percentage of a surface water source is unknown, it shall be estimated based on the measured or estimated volumes of recycled water, local runoff, and imported water that entered the reservoir for the three years before the year for which Gross Water Use is being calculated. For example, if Gross Water Use is being calculated for 2005, the blend percentage is estimated by dividing the volume of recycled water that entered the reservoir by the total volume of water that entered the reservoir from 2002 through 2004.

2. **Estimate recycled water used for groundwater recharge.** Three approaches are allowed to estimate the amount of recycled water extracted from groundwater and introduced into a distribution system. Because year-to-year variations can occur in the amount of recycled water applied in a groundwater recharge operation, long-term running averages are required.

[11] If the net change is negative, Gross Water Use will increase. If it is positive, Gross Water Use will decrease.

[12] Recycled water used for indirect potable use should only be subtracted at the time it enters the potable distribution system. It cannot be subtracted when placed into storage and again when extracted for potable use.

a. **Monitoring data at extraction wells.** If monitoring data are available to enable determination of the percent of extracted water at each extraction well that originated as recycled water (for example, using geochemical analysis), then such data can be used to estimate the amount of recycled water entering a distribution system. To account for year-to-year variations, the credit or recycled water is a five year running monthly average percentage for each well for the preceding 60 months. For recharge projects in operation less than 60 months, a period of 60 months can be created using a combination of actual monitoring data since initiation of recharge operations and projected data. The projected data can be based on an acceptable groundwater model as described in paragraph b below or a projected average of extraction using the procedure described in paragraph c below.

b. **Groundwater model for extraction wells.** If a groundwater model is available that has the capability of tracking the movement of recycled water from recharge operations to extraction wells and estimating the percent of extracted groundwater that originated as recycled water at each well operated by the water supplier based on actual historic data of recycled water applied at groundwater recharge operations, then such data can be used to determine the amount of recycled water entering a distribution system. The groundwater model must be calibrated and approved as part of an adjudication or other regulatory process, such as the groundwater permitting process by the California Department of Public Health or a California Regional Water Quality Control Board. To account for year-to-year variations, the credit for recycled water is a five-year running monthly average percentage at each well for the preceding 60 months. For recharge projects in operation less than 60 months, the monthly running average may be derived from the model using all months of actual recycled water applied in a recharge operation and projected recycled water amounts planned to be applied for a future period to reach a combined total of 60 months of operation.

c. **Recharge data less in-basin losses.** Where actual extraction well monitoring data or estimated data obtained from an accepted groundwater model, as described in paragraph b above, are unavailable, an estimate can be made of extracted recycled water based on amounts of recycled water applied in recharge operations adjusted for an in-basin loss factor. The allowable deduction depends on the product of three factors:

    i. The average annual volume of recycled water recharged into the groundwater basin for the purpose of indirect potable reuse over the 5 years before the year for which Gross Water Use is being calculated. For recharge projects in operation less than 60 months, data from all months of actual recharge operations may be combined with projected volumes of recycled water recharge to reach a combined total of 60 months of operation to calculate the average annual volume of recycled water recharged.

    ii. A loss factor to account for water losses during recharge and extraction. If a loss factor has been developed as part of a groundwater management plan,

a basin adjudication process, or some similar regulatory process, the water supplier shall use that loss factor and provide reference to the appropriate documentation. If a loss factor has not been developed as part of a local regulatory process, the water supplier shall use a default loss factor of 10 percent.[13] The default loss factor of 10 percent is not applicable to groundwater recharge operations intended as seawater intrusion barriers. For seawater intrusion barriers, the loss factor will be determined on a case-by-case basis.

iii. The volume of water pumped from the basin by the urban retail water supplier expressed as a percentage of the total volume of water pumped by all water users extracting water from the basin in the year for which Gross Water Use is being calculated.

For example, if the average annual recharge of recycled water for the five years before the year for which Gross Water Use is being calculated is 500 acre-feet (AF), the recharge loss factor is 10 percent, and the urban retail water supplier accounted for 25 percent of the volume of water pumped from the basin in the year for which Gross Water Use is being calculated, then no more than 113AF =(500 x (1.0-0.10) x 0.25) from this supply source can be deducted from Gross Water Use calculated in Step 7.

3. **Adjust for losses.** Only deduct the volume of recycled water used for indirect potable reuse that enters the distribution system from Gross Water Use calculated in Step 7.

Loss factors for transmission and treatment based on recent system audit data (or other reliable sources for estimating transmission and treatment losses) shall be applied to the estimated volumes of recycled water. For example, if the volume of recycled water before transmission and treatment is estimated to be 1,000 AF, and combined losses from transmission and treatment are estimated to be 3 percent, only 970 AF shall be deducted from Gross Water Use calculated in Step 7.

Table 2 shows an example calculation of the volume of recycled water used for indirect potable reuse based on approach 2.c above.

Step 9: Calculate Gross Water Use after Deducting Indirect Recycled Water Use

This equals the volume of water determined in Step 7 less the volume of water determined in Step 8. Table 1 shows an example calculation of Gross Water Use after indirect recycled water use deductions.

[13]The default value of 10 percent is based on the loss factors applied to groundwater storage in the Arvin-Edison and Semitropic Water Storage Districts. It also is consistent with the range of 0 to 15 percent loss factors applied to California water storage projects identified in the Groundwater Banking Programs Survey-Results and Summary Report prepared for the Sacramento Groundwater Authority by Kennedy/Jenks Consultants (2008). The projects they surveyed primarily used modeling and observation to determine the specific loss factor for each project.

Step 10 (Optional): Deduct from Gross Water Use the Volume of Water Delivered for Agricultural Use

This step is necessary only if the urban retail water supplier has chosen to exclude from the calculation of Gross Water Use water delivered for agriculture per Section 10608.12 (g) (4).

Consideration of agricultural water use must be the same for calculations of Gross Water Use for determining Base Daily Per Capita Water Use and Compliance Daily Per Capita Water Use.

Identify and tabulate the volume of water delivered through the distribution system for agricultural water uses. Do not include deliveries that bypass the distribution system (see Figure 1 for examples of agricultural deliveries inside and outside the distribution system).

Delivery volumes shall be based on account records and meter data for connections in the distribution system used to supply water for the commercial production of agricultural crops or livestock.[14]

Step 11 (Optional): Deduct Volume of Water Delivered for Process Water Use

This step is necessary only if the urban retail water supplier has elected to exclude process water from the calculation of Gross Water Use and the supplier is eligible to do so. An urban retail water supplier is eligible to exclude process water from the calculation of Gross Water Use only if its industrial water use comprises a substantial percentage of total water use.

[NOTE: See Appendix C for guidance on whether to include or exclude process water.]

Step 12: Calculate Gross Water Use after Optional Deductions

This equals the volume of water determined in Step 9 less the volume of water determined in Steps 10 and 11. Table 1 provides an example calculation of Gross Water Use after optional deductions.

[14]The standard used to identify distribution system connections supplying agricultural water uses is based on subdivision (b) of Section 535 of the California Water Code. Commercial agricultural production is defined by the U.S. Department of Agriculture and the Census Bureau as any place from which $1,000 or more of agricultural products (crops and livestock) were sold or normally would have been sold during the year. For the purposes of calculating Gross Water Use, retail nursery water use is not considered to be an agricultural water use.

Table 1: Example Urban Retail Water Supplier Gross Water Use Calculation

	Utility Name:	**12-month period:**		**1-Jan to 31-Dec**			**Volume Units:**		**Million Gallons**		
	Calculation	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
	Volume from Own Sources (raw data)	3,480.8									
	Meter error adjustment (+/-)	136.9									
1	*Subtotal: Corrected Volume from Own Sources*	3,617.7									
	Volume from Imported Sources (raw data)	1,005.0									
	Meter error adjustment (+/-)	39.5									
2	*Subtotal: Corrected Volume from Imported Sources*	1,044.5									
3	***Total Volume Into Dist. System = Line 1 + Line 2***	***4,662.2***									
	Volume Exported to Other Utilities (raw data)	432.0									
	Meter error adjustment (+/-)	17.3									
4	*Subtotal: Corrected Volume Exported to Other Utilities*	449.3									
5	Change in Dist. System Storage (+/-)	-8.6									
6	***Gross Water Use Before Indirect Recycled Water Use Deductions = Line 3 - Line 4 - Line 5***	***4,221.5***									
7	Indirect Recycled Water Use Deduction	304.3									
8	***Gross Water Use After Indirect Recycled Water Use Deductions = Line 6 - Line 7***	***3,917.2***									
9	*Water Delivered for Ag. Use (optional deduction)*	0.0									
10	*Process Water Use (optional deduction)*	278.8									
11	**Gross Water Use After Optional Deductions = Line 8 - Line 9 - Line 10**	**3,638.4**									

Table 2: Example Calculation of Annual Deductable Volume of Indirect Recycled Water Entering Distribution System

Surface Reservoir Augmentation			Volume Discharged from Reservoir for Distribution System Delivery (MG)	Recycled Water Blend	Recycled Water Delivered to Treatment Plant (MG)	Transmission/Treatment Loss	Transmission/Treatment Losses (MG)	Volume Entering Distribution System (MG)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					(4) x (5)		(6) x (7)	(6) – (8)
Source 1			1,000	5%	50	3%	1.5	48.5
Source 2			500	10%	50	3%	1.5	48.5
						Subtotal Reservoir Augmentation:		*97*

Groundwater Recharge	5-Year Annual Average Recharge (MG)	Recharge Recovery Factor	Recycled Water Pumped from Basin (MG)	Utility Pumping as % of Basin Total	Recycled Water Pumped by Utility (MG)	Transmission/Treatment Loss	Transmission/ Treatment Losses (MG)	Volume Entering Distribution System (MG)
			(4)	(5)	(6)	(7)	(8)	(9)
(1)	(2)	(3)	(2) x (3)		(4) x (5)		(6) x (7)	(6) – (8)
Basin 1	500	90%	450	25%	113	3%	3.4	109.1
Basin 2	750	90%	675	15%	101	3%	3	
						Subtotal Groundwater Recharge:		*207.3*
						Deductable Volume of Indirect Recycled Water Entering Distribution System:		**304.3**

MG = million gallons

Methodology 2: Service Area Population

Definition of the Service Area Population

Section 10608.20(f) states:

> *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.*

The legislation directs DWR to develop consistent methodologies and criteria for determining Service Area Population.

To obtain an accurate estimate of GPCD, water suppliers must estimate population of the areas that they actually serve, which may or may not coincide with either their jurisdictional boundaries or with the boundaries of cities. Customers may be in the distribution area with a wholly private supply during the baseline and compliance years, and new areas may be annexed into a water supplier's distribution system over time. The area used for calculating Service Area Population shall be the same as the distribution system area used in Methodology 1, Gross Water Use.

Figure 2 illustrates the many different situations that may arise, with the background grid indicating the census blocks that overlap with the water supplier's service area boundary.

Examples include the following:

- The actual distribution area may cover only a portion of the jurisdictional boundary.
- Large water users that depend wholly or partially on a private groundwater supply (e.g., college campus, a military installation, a correctional facility) may exist in the distribution area. If such a user is wholly dependent on private supply, its residents should be excluded. If the user is partially dependent (for example, it uses a municipal source for indoor use and private groundwater wells for irrigation only), its residents served by the municipal source should be included. Estimation of compliance GPCD for customers that switch their irrigation to a municipal source between the baseline and compliance years is addressed in Methodology 4: Compliance Daily Per Capita Water Use.
- New customers outside the present distribution area may connect to the water supplier's distribution system in the future for various reasons.
- The water supplier's distribution system can geographically expand over time as a result of economic and population growth.

Although a water supplier may consult any or all federal, State, and local data sources to estimate population, these estimates must account for the above-mentioned complexities.

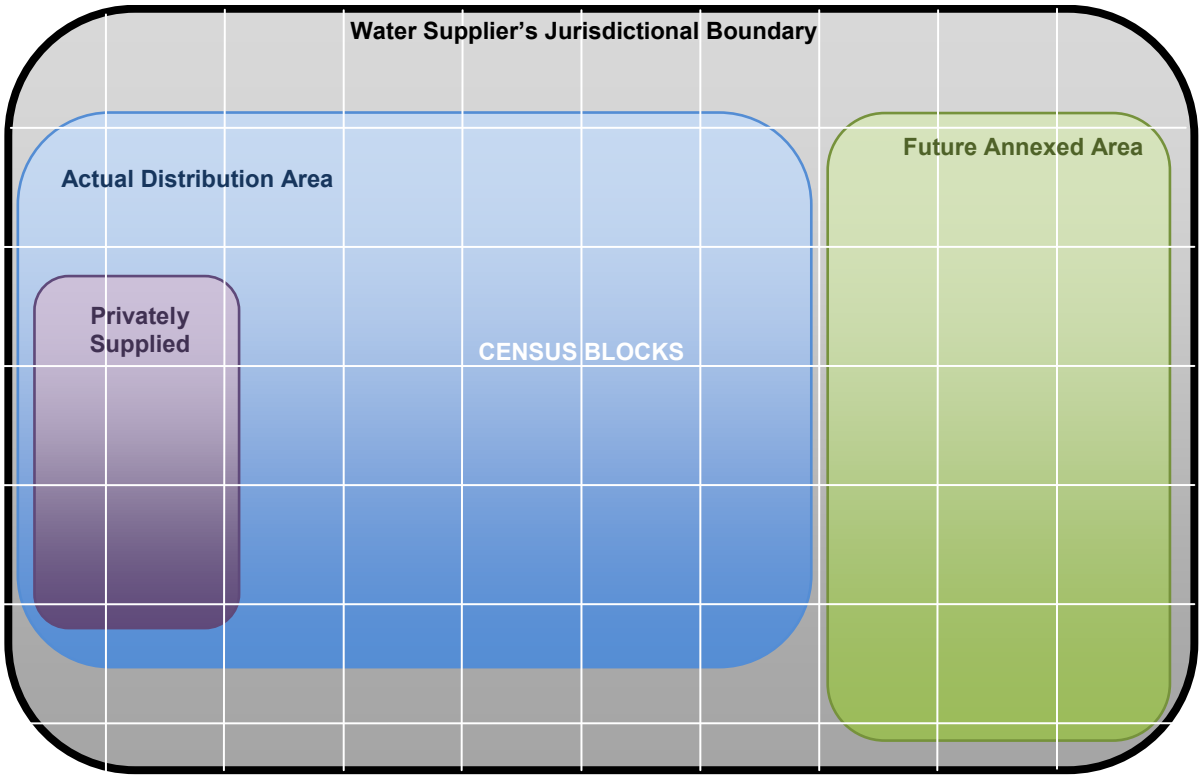

FIGURE 2 DEFINING AREA FOR POPULATION CALCULATION

Estimating the Service Area Population

Data published by the California Department of Finance (DOF) or the U.S. Census Bureau must serve as the foundational building block for population estimates. In some instances, data published by these two sources may be directly applicable. In other instances, additional refinements may be necessary. For example, to account for distribution areas that do not match city boundaries, customers with private sources of supply, or other unique local circumstances, water suppliers may have to supplement the above sources of data with additional local data sources such as county assessor data, building permits data, and traffic analysis zone data. These refinements are acceptable as long as they are consistently applied over time, and as long as they build upon population data resources of the DOF or the U.S. Census Bureau. Suppliers in any category listed below may use the person-per-connection or person per housing unit population calculation.

Retail water suppliers will generally fall into one of the following three categories:

- Category 1: Water suppliers whose actual distribution area overlaps substantially (≥95%) with city boundaries (may be a single city or a group of cities) during baseline and compliance years
- Category 2: Water suppliers not falling in Category 1 but having an electronic geographic information system (GIS) map of their distribution area

- Category 3: Water suppliers not falling in Category 1 and lacking an electronic GIS map of their distribution area.

Category 1 Water Suppliers

These water suppliers are encouraged to use population data published by the DOF's demography unit. However, population data may also be available through a water wholesaler, a local government agency, or an association of local governments. A list of associations of local governments is available through the California Association of Councils of Government (CALCOG: www.calcog.org). Many of these associations serve as census data repositories and also have GIS capabilities.

Category 1 water suppliers may use population estimates from any of these federal, state, or local agencies, as long as they clearly cite their data source, use the same source for both the baseline and compliance years, and correct these estimates for privately supplied large customers that may exist in their actual distribution area

Category 2 Water Suppliers

These water suppliers have two options:

- Water suppliers that are members of an association of local governments (or a water wholesaler) that develop population estimates for its members using GIS maps of actual distribution areas and population data from the DOF or Census Bureau should use these data for the baseline and compliance years. The water suppliers should coordinate with the local government association or wholesaler to complete the task of identifying and removing large institutions with wholly private systems in their distribution area.
- Water suppliers without such membership must develop population estimates using either a per-connection or per-housing unit methodology or another equivalent method that uses data either from the DOF or the U.S. Census Bureau as its basis.

Category 3 Water Suppliers

These water suppliers have the same two options as Category 2 water suppliers. The only difference is that to access the U.S. Census Bureau's population data resources, they first must identify which census blocks fall in their distribution area. This exercise can be performed manually, or the distribution area map boundary can be digitized. Category 3 water suppliers may be able to access these digitization capabilities and census-based population estimation capabilities through their local association of governments. Alternatively, they can develop population estimates using either the per-connection or per-housing unit methodology or another equivalent method that uses data from either the DOF or the U.S. Census Bureau as its basis.

Determining Adequacy of Current Population Estimate Methodology

Figure 3 provides a flow chart to help water suppliers determine whether their existing population estimation methodology is adequate or must be refined. If refinement is needed, it should be coordinated with the water wholesaler or the local association of governments that currently provides population estimates. Water suppliers that currently lack access to reliable population estimates that reflect characteristics of their actual distribution areas can use a per-connection methodology.

Adjusting Population Estimates

Population increases in existing developed areas or high-density infill redevelopments are estimated annually by DOF for incorporated cities and unincorporated portions of counties. These and other sources of local data may be used to estimate population for the non-census years. For water suppliers using a person-per-connection methodology, population changes largely will be captured through the changes in counts of active connections over time.

Water suppliers may revise population estimates for baseline years between 2000 and 2010 when 2010 census information becomes available. Water suppliers who did not use 2010 Census data to calculate baseline water use in the 2010 UWMPs (final 2010 Census was released in 2012), must recalculate baseline water use using the 2000 Census and the 2010 Census for the 2015 UWMP. Service area boundaries may also contract or expand during the baseline period. The latter could occur because of annexation of previously developed areas that may have been dependent upon private groundwater wells in the past but have subsequently become part of an urban retail water supplier's system. The following list provides guidance under various annexation scenarios. Additional adjustments may be required to population estimates for events that occur between the baseline and compliance years. These issues are discussed in Methodology 4: Compliance Daily Per Capita Use.

- If a portion of the distribution area is removed during one of the baseline years, water suppliers must compute their baseline after eliminating this removed portion from all their baseline years.
- If an area was annexed before the first baseline year, or the annexation involves merger with another urban retail water supplier, no data issues arise. In the latter case, population and connections data would be available for each water supplier separately. If not, appropriate estimates should be developed and documented.
- If the area was annexed before 2000, population estimates should be developed for the annexed area using the census block and person-per-connection method, or an equivalent method.
- If the area was annexed after 2000, the water supplier will know the connection count only in the year of the annexation, not in 2000 and corresponding to the population estimate. Water suppliers may apply person-per-connection ratios developed for their pre-annexation distribution area to estimate population in the annexed area, or use other defensible techniques. For example, they could obtain county assessor data to back-cast what connection counts would have been in the annexed area in 2000 to permit scaling of census population estimates for the annexed areas to the post-annexation years. These can be further improved after 2012 once data from the 2010 census become available.

Water suppliers in other unique situations, such as those experiencing a significant change in their seasonal workforce or seasonal resident population between the baseline and compliance years, may adjust their population estimates using other techniques. The water supplier must provide documentation that the technique is based on or consistent with DOF or U.S. Census Bureau population data.

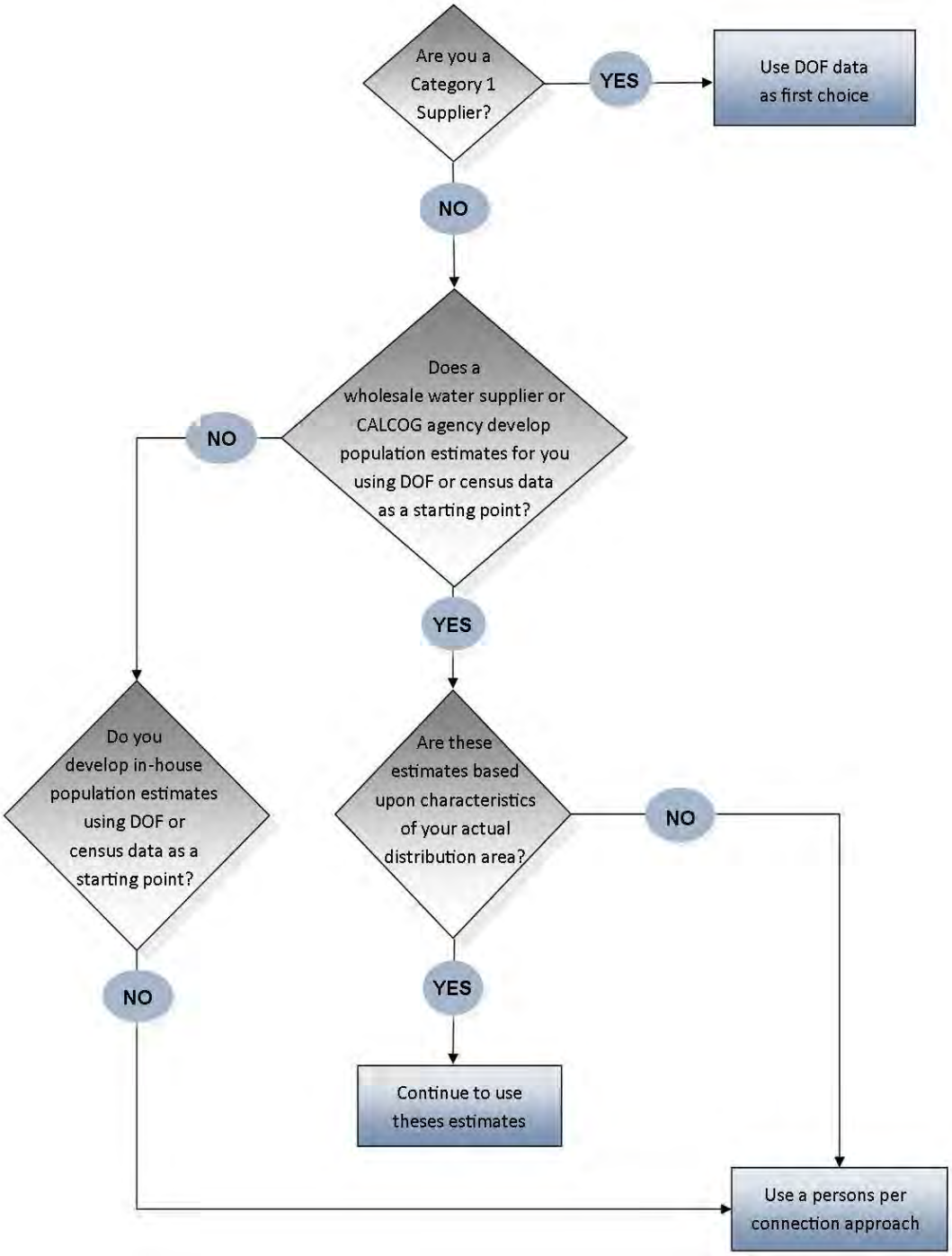

FIGURE 3 SUGGESTED PROCESS FOR DETERMINING ADEQUACY OF SERVICE AREA POPULATION ESTIMATE METHODOLOGY

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Methodology 3: Base Daily Per Capita Water Use

Definition of Base Daily Per Capita Water Use

Base Daily Per Capita Water Use is defined as average gross water use, expressed in GPCD, for a continuous, multiyear base period. The Water Code specifies two different base periods for calculating Base Daily Per Capita Water Use under Section 10608.20 and Section 10608.22:

- The first base period is a 10- to 15-year continuous period, and is used to calculate baseline per capita water use per Section 10608.20.
- The second base period is a continuous five-year period, and is used to determine whether the 2020 per capita water use target meets the legislation's minimum water use reduction requirement per Section 10608.22.

Unless the urban retail water supplier's five year Base Daily Per Capita Water Use per Section 10608.12 (b) (3) is 100 GPCD or less, Base Daily Per Capita Water Use must be calculated for both baseline periods.

Calculation of Base Daily Per Capita Water Use

Calculating Base Daily Per Capita Water Use entails four steps:

1. Estimate Service Area Population for each year in the base period using Methodology 2.
2. Calculate Gross Water Use for each year in the base period using Methodology 1. Express Gross Water Use in gallons per day (gpd).[15]
3. Calculate daily per capita water use for each year in the base period. Divide Gross Water Use (determined in Step 2) by Service Area Population (determined in Step 1).
4. Calculate Base Daily Per Capita Water Use. Calculate average per capita water use by summing the values calculated in Step 3 and dividing by the number of years in the base period. The result is Base Daily Per Capita Water Use for the selected base period.

[15]If Gross Water Use is expressed in million gallons per year, multiply by 1,000,000 and then divide the result by 365. If Gross Water Use is expressed in acre-feet, multiply by 325,851 and then divide the result by 365.

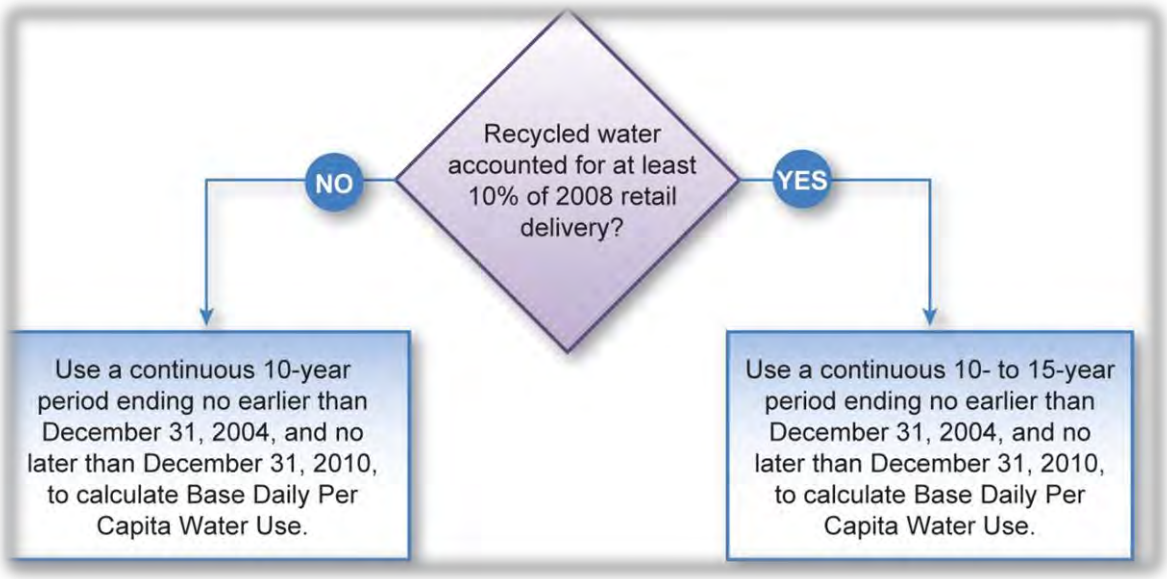

FIGURE 4 10 TO 15 YEAR BASE DAILY PER CAPITA WATER USE CALCULATIONS

Calculating Base Daily Per Capita Water Use per Section 10608.20

Calculate Base Daily Per Capita Water Use using one of the following base periods:

- If recycled water made up less than 10 percent of 2008 retail water delivery, use a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.
- If recycled water made up 10 percent or more of 2008 retail water delivery, use a continuous 10- to 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

Figure 4 illustrates the procedure. If Gross Water Use and/or population are not available for the full base period, the water supplier shall calculate base daily per capita water use for the maximum number of years for which data are available. When selecting between base periods, the water supplier shall select the base period for which the most data are available.

For example, if gross water use and/or population data are not available before 1997, the water supplier shall select a base period starting in 1997.

Distribution Area Expansion Caused by Mergers

If two or more water suppliers merged wholly, or one water supplier acquired a portion of another's service area, during a year that falls in the baseline period of the merged entity, they should derive their baseline GPCD as if they were a single entity for the entire baseline period to stay consistent with the targets and compliance GPCDs that would represent the merged entity.

Distribution Area Contraction

If during the baseline period a previously served portion of the distribution system is removed from a water supplier's service area, the baseline GPCD shall be corrected to reflect only that portion of the service area that remained consistently supplied during the baseline and compliance years.

Distribution Area Expansion by Annexation of Already Developed Areas[16]

For areas annexed during the baseline years, water suppliers can select one of two choices:

- Include these areas for baseline GPCD estimation and test compliance for the combined entity.
- Track baseline and compliance GPCDs for the annexed areas separately.

Determining the Minimum Water Use Reduction Requirement per Section 10608.22

The following calculation is required only if the five-year baseline per capita water use per Section 10608.12 (b) (3) is greater than 100 gpcd. The calculation is used to determine whether the water supplier's 2015 and 2020 per capita water use targets meet the legislation's minimum water use reduction requirement per Section 10608.22.
The calculation entails three steps:

1. Calculate Base Daily Per Capita Water Use using a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.[17]
2. Multiply the result from Step 1 by 0.95. The 2020 per capita water use target cannot exceed this value (unless the water supplier's five year baseline per capita water use is 100 gpcd or less). If the 2020 target is greater than this value, reduce the target to this value.
3. Set the 2015 target to the mid-point between the 10- or 15-year baseline per capita water use and the 2020 target determined in Step 2.

As an example, suppose a water supplier has a 10-year baseline per capita water use (per Section 10608.20) of 170 GPCD, and a 5-year baseline per capita water use (per Section 10608.22) of 168 GPCD.

- The maximum allowable GPCD target in 2020 (per Section 10608.22) is 0.95 x 168 GPCD = 160 GPCD.
- The 2020 target under Method 1 is 0.8 x 170 GPCD = 136 GPCD.

[16]Annexation here refers to already developed and inhabited areas that may have relied upon groundwater until this point in time, or on other sources of water for which data are not available, and that were not previously connected to a municipal source. This is not to be confused with annexation of previously undeveloped land. No adjustment is required for the latter type of annexation, whose impact on GPCD is naturally accounted for by the estimation of base period Gross Water Use and Service Area Population.

[17]If 5 years of continuous data are not available, use the maximum number of years for which data are available.

Because the Method 1 target is less than 160 GPCD, no further adjustment to the 2020 target is required if Method 1 is used.

Suppose the water supplier's 2020 target under Method 3 is 167 GPCD. Because this is greater than 160 GPCD, the target would need to be reduced to 160 GPCD if Method 3 is used.

Similarly, if a target calculated using Method 2 or 4 exceeded 160 GPCD, it would need to be reduced to 160 GPCD in order to satisfy the legislation's minimum water use reduction requirement. Figure 5 shows how the two baseline per capita water use amounts are used to determine whether the 2020 target meets the legislation's minimum water use reduction requirement.

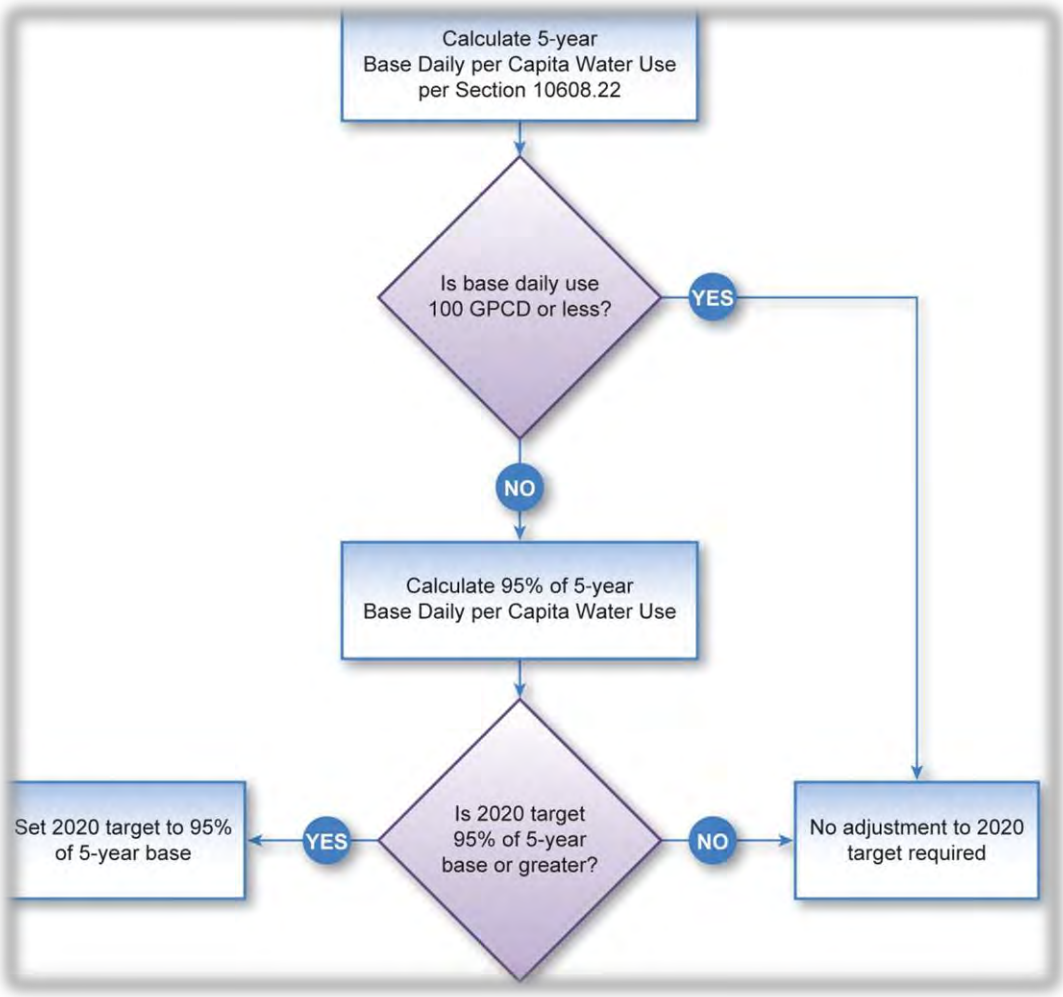

FIGURE 5 DETERMINATION OF MAXIMUM ALLOWABLE 2020 GPCD TARGET

Tables 3 and 4 may be used to organize the information needed to calculate Base Daily Per Capita Water Use under Sections 10608.20 and 10608.22.

Table 3: Base Daily Per Capita Water Use Calculation for Section 10608.22

Utility Name: _____

12-month Period: _____ to _____

(1)	(2)	(3)	(4)
Base Years*	**Service Area Population**	**Gross Water Use (gal. per day)**	**Daily Per Capita Water Use (3) ÷ (2)**
Year 1			
Year 2			
Year 3			
Year 4			
Year 5			
		Total of Column (4):	
		Divide Total by 5:	

*Most recent year in base period must end no earlier than December 31, 2007, and no later than December 31, 2010.

Table 4: Base Daily Per Capita Water Use Calculation for Section 10608.20

Utility Name: _____

12-month Period: _____ to _____

(1)	(2)	(3)	(4)
Base Years*	**Service Area Population**	**Gross Water Use (gal. per day)**	**Daily Per Capita Water Use (3) ÷ (2)**
Year 1			
Year 2			
Year 3			
Year 4			
Year 5			
Year 6			
Year 7			
Year 8			
Year 9			
Year 10			
Year 11			
Year 12			
Year 13			
Year 14			
Year 15			
		Total of Column (4):	
		Divide Total by Number of Base Years:	

* Enter the actual year of the data in this column. The most recent year in base period must end no earlier than December 31, 2004, and no later than December 31, 2010. *The base period cannot exceed 10 years unless at least 10 percent of 2008 retail deliveries were met with recycled water.*

Revisions to Base Daily Per Capita Water Use or Targets

A water supplier may revise its calculated Base Daily Per Capita Water Use after submitting its 2010 urban water management plan if better information becomes available. The revisions may be included in the water supplier's 2015 and subsequent plans or may be submitted as an amended plan, provided it follows the process required for amendments to such plans. If the revisions to the Base Daily Per Capita Water Use changes the water use target, the water use target must be revised as well.

In addition, a water supplier may change the method it uses to set its water use target, and report the method change and target revision in a 2010 amended plan or in its 2015 urban water management plan. Target method changes are not permitted in the 2020 plan or amended 2015 plans.

Methodology 4: Compliance Daily Per Capita Water Use

The following methodology addresses estimation of compliance daily per capita water use (in GPCD) in the years 2015 and 2020.

Definition of Compliance Daily Per Capita Use

Section 10608.12(e) states:

> *"Compliance daily per-capita use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.*

Estimation of Compliance-Year GPCD

Methodology 1: Gross Water Use and Methodology 2: Service Area Population shall be used to develop the two basic components for estimating compliance-year GPCD. This section discusses adjustments to compliance-year GPCD because of changes in distribution area caused by mergers, annexation, and other scenarios that occur between the baseline and compliance years.

Adjustments are allowed in calculating compliance-year GPCD for factors described in Section 10608.24. These adjustments are discussed in Methodology 8: Criteria for Compliance-Year Adjustment.

Distribution Area Expansion Caused by Mergers

If water suppliers merge, or one water supplier acquires a portion of another's service area, between the baseline period and the compliance year, they have two choices:

- Test compliance separately for each service area.
- Calculate a (compliance year) population weighted average of each system's target and determine compliance as a single entity using this weighted average.

Distribution Area Contraction

If a previously supplied portion included in the baseline is removed from the distribution area before the compliance years, water suppliers shall re-compute their baseline GPCD after eliminating the removed portion for all baseline years.

Distribution Area Expansion by Annexation of Already Developed Areas[18]

For areas annexed between the baseline and compliance years, a water supplier must determine Base Daily Per Capita Water Use, target water use, and compliance water use.

- Base Daily Per Capita Water Use for the annexed area shall be determined using the same baseline period as the water supplier's original service area (before the annexation). If such data are not available, the water supplier shall use a baseline period starting with the earliest year available for the annexed area and including ten years, if available. If no data exist for years before annexation, the water supplier shall use data from the year of annexation.
- Annexed areas shall be assigned a prorated target based upon the number of years between annexation and the end of 2020. For example, if a water supplier's target is based on a 20 percent reduction by 2020, and it annexes an area in 2017, this annexed area should show a 6 percent reduction in GPCD by 2020 relative to its 2017 GPCD.
- Compliance may be determined for the separate service areas (annexed and original), or for the combined service area using a (compliance year) population weighted average.

If compliance is determined separately for separate service areas, both areas must be in compliance for supplier to be in compliance.

Distribution Area Expansion by Annexation of Undeveloped Areas

No special adjustment calculation is needed for areas that were undeveloped during the baseline period but which were annexed and developed between the baseline period and compliance year. The impact on GPCD is accounted for by the estimation of compliance year Gross Water Use and compliance-year population.

Existing Large Partial Customers Become Whole Customers

Large customers that pump groundwater or take surface water for landscape irrigation or other uses (depending on their municipal source solely for indoor use) may switch and use only the municipal source. This change will disrupt the baseline and compliance year comparison. Two adjustments are provided below:

- If the switch occurs during the baseline years, the landscape irrigation or other use should be included in the compliance-year gross water calculation.
- If the switch occurs between the baseline and compliance years, the water associated with irrigation use switches, properly documented and subjected to the requirements of the Model Water Efficient Landscape Ordinance adopted by DWR in 2009, may be excluded from the calculation of compliance-year Gross Water Use. Otherwise, the irrigation or other use must be included in both the baseline and compliance year gross water use calculations.

[18]Annexation here refers to already developed and inhabited areas that may have relied upon groundwater until this point in time and were not previously connected to a municipal source.

Water Supplier Subject to Urban Water Management Plan Reporting Requirements between 2010 and 2020

Water suppliers that become subject to urban water management plan reporting requirements after 2010 also become subject to the new requirements of Section 10608 of the Water Code from the same year onward. These water suppliers are required to estimate their baseline GPCD and establish their 2020 GPCD targets using the same methodological guidelines that apply to other water suppliers. However, for testing compliance, such water suppliers may prorate these targets depending on the year the water supplier became subject to the new requirements.

For example, if a water supplier chooses a 2020 target that is 20 percent below its baseline GPCD, but it became subject to the new requirements only in 2017, it shall test compliance against a target that is 6 percent below its baseline GPCD.

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Methodology 5: Indoor Residential Use

Definition of Indoor Residential Use

Section 10608.20(b)(2)(A) states:

> *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.*

Section 10608.42 states:

> *The department shall review the 2015 urban water management plans and report to the Legislature by December 31, 2016, 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 in order to achieve the 20-percent reduction and to reflect updated efficiency information and technology changes.*

Section 10608.20(b)(2)(A) sets a provisional standard for efficient indoor use (55 GPCD) that urban retail water suppliers using target Method 2 must use to set their 2020 target.

However, they are not required to demonstrate that this indoor residential target has actually been met—only that the overall target, which includes additional components for landscaped area water use and CII water use, has been met.

Section 10608.42 requires DWR to submit a report to the Legislature in 2016 that will include recommendations on changes to water use efficiency standards to reflect updated efficiency information and technological changes. DWR will conduct a study to assess whether the provisional indoor residential standard of 55 GPCD should be adjusted.

Based on the report DWR submits in 2016, the Legislature may change the indoor residential standard. The indoor residential standard is used only to set the target under Method 2; calculation of indoor usage by water supplier is not required for determining compliance with Method 2.

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Methodology 6: Landscaped Area Water Use

The calculation of Landscaped Area Water Use requires a measurement (or estimate) of landscaped area and of the landscape water use per unit area (based on reference evapotranspiration [ET]). As with other urban water use measures under Section 10608, Landscaped Area Water Use is defined as a daily per capita rate of water use; consequently, Methodology 2: Service Area Population is used in calculating Landscaped Area Water Use.

Definition of Landscaped Area Water Use

For the Landscaped Area Water Use component of target Method 2, Section 10608.20 (b) (2) (B) states:

> *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.*

All landscape irrigated by dedicated or residential meters must be included, including multifamily residential parcels. Definitions and calculations contained in the Model Water Efficient Landscape Ordinance (MWELO) are provided in Appendix A. These calculations give the Landscaped Area Water Use as a function of landscaped area and reference ET. The MWELO defines landscaped area as planting areas, turf areas, and water features. Landscaped area excludes footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (such as open spaces and existing native vegetation). Section 10608.20 (b)(2)(B) restricts the landscaped area to include only landscape irrigated through dedicated or residential meters or connections.

Landscaped area for the purposes of calculating the Method 2 target shall mean the water supplier's estimate or measurement of 2020 landscaped areas. Water suppliers shall develop a preliminary estimate (forecast) of 2020 landscaped areas for purposes of setting urban water use targets and interim urban water use targets under Subdivision 10608.20 (a) (1).

For final compliance-year calculations, water suppliers shall update the estimate of 2020 landscaped areas using one of the techniques described in the following sections.

Approach to Calculating Landscaped Area Water Use

Water suppliers shall follow five steps to calculate Landscaped Area Water Use:

1. Identify applicable MWELO (1992, 2010 or 2015) for each parcel.

2. Estimate irrigated landscaped area for each parcel.
3. Determine reference evapotranspiration for each parcel.
4. Use the Maximum Applied Water Allowance (MAWA) equation from the applicable MWELO to calculate annual volume of landscaped area water use.
5. Convert annual volume to GPCD.

Identify Applicable MWELO for Each Parcel

Before computing landscaped area, water suppliers must determine how MWELO ordinances apply to specific parcels in their service areas. Two versions of MWELO apply according to the date when landscaping was installed in a given parcel:

- For landscaped areas installed on or after December 1, 2015, the MAWA equation and all applicable criteria from the 2015 version of the ordinance or its equivalent shall be used.
- For landscaped areas installed on or after January 1, 2010, the MAWA equation and all applicable criteria from the 2009 version of the ordinance or its equivalent shall be used.
- For landscaped areas installed before January 1, 2010, the MAWA equation and all applicable criteria from the 1992 version of the ordinance or its equivalent shall be used.

For the purposes of this methodology, two important differences between the two ordinances are the ET adjustment factor and the inclusion of a special landscaped area for calculating a water allowance in the 2010 ordinance. The applicable definitions and calculations in these ordinances are provided in Appendix A.

Landscaped Area Water Use shall be calculated for each parcel (or groups of parcels with the same reference ET and applicable MWELO) using Maximum Applied Water Allowance (MAWA) computations from the applicable MWELO.

Water suppliers should use the best available information to determine which MWELO applies to each parcel. This may include date of submittal for MWELO design review, date of service establishment, and remote sensing information.

The calculations provided in Appendix A will yield water use estimates in gallons per year.

The total Landscaped Area Water Use for the water supplier will equal the total Landscaped Area Water Use of all parcels in the water supplier's service area. Because Landscaped Area Water Use is defined in units of GPCD, the result of the calculation above must be divided by Service Area Population and then converted from annual to daily use.

Measure Landscaped Area

The water supplier shall select a technique for measuring landscaped area that satisfies the following criteria:

- The landscaped area must be measured or estimated for all parcels served by a residential or dedicated landscape water meter or connection in the water supplier's service area.

- Only irrigated landscaped area served by residential or dedicated landscape water meter or connection shall be included in the calculation of Landscaped Area Water Use. Landscape served by CII connections and non-irrigated landscape shall be excluded. (All references to landscaped area below shall mean irrigated landscaped area served by a residential or dedicated landscape meter or connection.)

Measurement Techniques

The following sections describe techniques that may be used to measure landscaped area. Water suppliers may use one or a combination of these techniques.

Field-Based Measurement. Field-based measurement of parcels' landscaped area may be accomplished by physical measurement using devices such as a total station, measuring wheel and compass, global positioning system (GPS), or other measuring devices having accuracy similar to these devices. Field-based measurement also may be obtained from landscape designs submitted to the water supplier for compliance with the MWELO or for other planning and billing purposes.

Measuring with Remote Sensing. The landscaped area may be measured by using remote sensing (aerial or satellite imaging) to identify the landscaped areas in conjunction with a GIS representation of the parcels in the water supplier's service area. A variety of remote sensing techniques are available, and additional techniques may become available between now and 2020. DWR will allow the water supplier to select the remote-sensing technique that it prefers. However, the following conditions shall be met:

- The remote-sensing information must be overlaid onto a GIS representation of each parcel boundaries to estimate the irrigated landscaped area in each parcel.
- The remote-sensing imagery must have a resolution of 1 meter or less per pixel.
- The remote-sensing technique must be verified for accuracy by comparing its results to the results of field-based measurement for a subset of parcels selected using random sampling. The water supplier shall report the resulting percent error between the estimates of landscaped area produced by the remote-sensing technique and those produced by field-based measurements for the sampled parcels.
- DWR has not set its own standards for remote-sensing verification and sampling design. The water supplier shall provide a description of its remote-sensing technique (including imagery, data processing, and verification) when it reports its landscaped area for purposes of complying with provisions of the Water Code. Congalton and Green (1999)[19] and Stein et al. (2002)[20] are two references that describe professional standards for remote sensing.

[19]Congalton, R. G., and K. Green, 1999. Assessing the Accuracy of Remotely Sensed Data: Principles and Practices. CRC Press, Boca Raton, FL.
[20]Stein, A., F. van der Meer, and B. Gorte, eds. 2002. Spatial Statistics for Remote Sensing. Kluwer Academic Publishers, Netherlands.

Using Sampling to Estimate Landscaped Area on Small Parcels. The landscaped area for smaller-sized parcels may be calculated by measuring the percentage of total parcel area that is landscaped in a sample of similar parcels and applying that percentage to the remaining parcels. This technique may be used only for parcels with a total land area of 24,000 square feet or less. The parcels for which this technique is used shall be divided into groups, or strata, based on parcel size increments of 4,000 square feet or less. (For example, parcels up to 4,000 square feet would form one group, parcels between 4,001 and 8,000 square feet would form another group, and so forth.) Field-based measurement or remote sensing must be used to calculate the landscaped area for a subset of parcels sampled at random in each parcel size group. The percentage of landscaped area to total land area for the sampled parcels in each group can then be used to calculate the landscaped area for all other parcels in the group. Parcels greater than 24,000 square feet shall be measured directly.

Statistical sampling is a means to provide adequate information at reasonable cost. If implemented carefully, sampling allows the water supplier to develop accurate estimates of landscaped area for all relevant parcels from a subset of parcels. However, sampling shall not be used to estimate landscaped area for parcels larger than 24,000 square feet. Stratified sampling (random sampling in identified subgroups of parcels) should be used to estimate the landscaped area in different parcel size groups, as described earlier. Other characteristics of parcels may be used as a basis for selecting the strata in addition to parcel size.

DWR has not developed specific standards for sampling design. Urban water suppliers should follow standards of professional practice sufficient to demonstrate unbiased estimates of landscaped area. For example, Cochrane (1977)[21] and Lohr (2010)[22] provide guidance for sound sampling design.

Other Measurement Techniques. The water supplier may use another technique to measure landscaped area for each parcel other than the ones described previously if one becomes available in the future. However, the technique must meet similar conditions to those described above for remote sensing:

- The landscaped area information must be gathered or reported on a parcel basis, or it must be overlaid onto a GIS representation of each parcel's boundaries to calculate the landscaped area in each parcel.
- The technique must be tested for accuracy by comparing its results to the results of field-based measurement for a subset of parcels. Field-based measurement should be performed for a subset of parcels selected at random from those for which the technique has been used. The water supplier should report the percent error between the calculations of landscaped area produced by the selected technique and those produced by field-based measurements for the sampled parcels.

[21]Cochrane, William G. 1977. Sampling Techniques. 3rd edition. Wiley; NY, NY.
[22]Lohr, Sharon. 2010. Sampling: Design and Analysis. Brooks/Cole Cengage, Boston, MA. 2nd edition.

Estimate Reference Evapotranspiration

Calculations under the MWELO require determination of reference ET. Each parcels served by a residential or dedicated landscape water meter or connection in the water supplier's service area shall be assigned a reference ET based on one of the following methods:

- Appendix A of the 2015 ordinance contains tables of reference ET. In some cases, the water supplier may choose a single reference ET value most appropriate for all parcels in its service area. For parcels in geographic areas not covered in the Appendix A table, the ordinance provides the following direction for selecting the appropriate reference value: "For geographic areas not covered in Appendix A, use data from other cities located nearby in the same reference evapotranspiration zone, as found in the CIMIS Reference Evapotranspiration Zones Map, Department of Water Resources, 1999."
- DWR has developed a spatial program (Spatial CIMIS) that provides interpolated ET data between weather stations.[23] The program can provide estimates of reference ET for any part of California with a resolution of 2 kilometer (km) by 2 km. Water suppliers may use this tool to assign reference ET to parcels. Any other CIMIS enhancements or additional stations formally adopted by DWR between 2010 and 2020 also may be used.
- Water suppliers may use local reference ET estimates that are not formally part of CIMIS or that make adjustments to CIMIS station estimates, provided that such estimates or adjustments are scientifically derived and of comparable reliability to CIMIS estimates.

The water supplier shall explain why neither the CIMIS nor other approved DWR reference ET information is adequate, and shall provide the data and calculations used to develop the local reference ET estimate.

Apply MAWA Equation to Calculate Annual Volume

Appendix A provides the MAWA equations that apply to parcels. These equations, or their equivalents, will yield water use estimates in gallons per year. The total Landscaped Area Water Use for the water supplier will equal the total Landscaped Area Water Use of all parcels in the supplier's service area.

Convert Annual Volume to GPCD

After the MAWA for all parcels has been summed to determine the total Landscaped Area Water Use portion of the Method 2 target, the total must be divided by Service Area Population and then by 365 to calculate the Landscaped Area Water Use in GPCD. Refer to Methodology 2: Service Area Population to complete this step. Because Landscaped Area Water Use is defined in units of GPCD, the result must be converted from annual to daily use.

[23]California Irrigation Management Information System. The spatial model is available at http://www.cimis.water.ca.gov/cimis/cimiSatSpatialCimis.jsp.

Summary of Steps to Calculate Landscaped Area Water Use

Calculating Landscaped Area Water Use requires the following process:

1. Assign applicable MWELO (1992, 2009 or 2015) to each parcel.
2. Estimate landscaped area for each parcel.
    a. Select measurement technique(s) for landscaped area (for example, field based, remote sensing, or sampling).
    b. Apply technique(s) to calculate total landscaped area for each parcel. (This applies only to parcels for which landscaped area has not yet been measured.)
    c. Measure special landscape area (SLA) where applicable.
3. Determine the reference ET for each parcel.
4. Use the MAWA from the applicable MWELO to calculate Landscaped Area Water Use for all parcels.
    a. Use the equations, or their equivalents, to calculate the MAWA for each parcel or group of parcels (grouped according to applicable MWELO, reference ET, and presence of SLA).
    b. Sum the MAWA over all parcels to calculate the total annual Landscaped Area Water Use portion of the Method 2 target.
5. Divide the total from Step 4 by Service Area Population and then by 365 to calculate the Landscaped Area Water Use in GPCD.

Methodology 7: Baseline Commercial, Industrial, and Institutional Water Use

Baseline Commercial, Industrial and Institutional (CII) Water Use is needed for urban water use target Method 2 (along with the indoor residential and landscape uses). It also affects the adjustment factors that agencies may consider at the time of testing compliance in 2015 and 2020 by allowing them to make adjustments based on "substantial changes" in CII relative to Baseline CII Water Use per Section 10608.24 (d)(1)(B). The definition of "substantial change" and adjustments are discussed in Methodology 8: Criteria for Adjustments to Compliance Daily Per Capita Water Use.

Definition of Baseline CII Water Use

Section 10608.12 defines Baseline CII Water Use and related concepts as follows:

(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.

(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.

Use of Baseline CII Water Use

Urban retail water suppliers are given several methods for calculating water use targets. Method 2 allows them to calculate a target by using three components: Indoor Residential Use, Landscaped Area Water Use, and Baseline CII Water Use. Section 10608.20 (b)(2)(C) specifies that the CII portion of the target is to be calculated as follows:

For CII uses, a 10 percent reduction in water use from the baseline CII water use by 2020.

Calculation of Baseline CII Water Use

Baseline periods that a retail water supplier may use to determine Baseline CII Water Use shall follow the same direction required for Base Daily Per Capita Water Use under Section 10608.12.(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.

A retail water supplier must have CII data for the entire baseline period used in the water supplier's calculation of Base Daily Per Capita Water Use. If the CII data do not exist, the retail water supplier should use another water use target method.

For each year in the baseline period, the volume of Baseline CII Water Use shall be divided by the Service Area Population (see Methodology 2), and the average of those calculations, converted to a daily rate, is the Baseline CII Water Use for the purpose of calculating the Method 2 target as defined in Section 10608.20(b)(2). The procedure for averaging the annual per capita CII use is the same as for calculating Base Daily Per Capita Water Use (refer to Methodology 3: Base Daily Per Capita Water Use).

The CII component of the 2020 target for Method 2 shall be the Baseline CII Water Use (in GPCD) multiplied by 0.9.

Process Water Exclusion

A retail water supplier may elect to exclude process water from its calculation, consistent with Section 10608.24(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.*

If a water supplier elects to exclude process water, it must do so for baseline and compliance year per capita water use and for baseline CII water use. DWR regulations that define when and how process water can be excluded from Gross Water Use and Baseline CII Water Use calculations are provided in Appendix C.

Adjustments for Multifamily Residential Connections

A retail water supplier whose baseline CII data includes some multifamily residential uses must demonstrate that it can accurately adjust the data to remove those uses.

In cases where the retail water supplier can estimate the population in multifamily residences included in the CII data, the supplier must do both of the following:

1. Use the adjustment procedure described below in Adjustments for Residential Uses in CII Connections to remove indoor residential uses from the CII data.
2. Assure that landscaped area in the CII data is excluded from the calculations of Landscaped Area Water Use.

In situations where the supplier cannot estimate the population in multifamily residences included in the CII data, Method 2 cannot be used to set the water supplier's water use target.

Adjustments for Residential Uses in CII Connections

Some CII connections also may serve group quarters or other residential uses. Examples could include campus dormitories, military base housing, and apartments that are served by a CII connection. Water use target Method 2 already provides an indoor use allowance of 55 GPCD for such residents. To ensure that this indoor use is not double-counted, the following steps must be used to adjust the CII component of the target water use under Method 2:

1. Estimate the average population served by CII connections during the baseline period and whose residents use is included in the water supplier's unadjusted Baseline CII Water Use.
2. Calculate the average daily volume of target Indoor Residential Use associated with this population by multiplying the result of Step 1 by the 55-GPCD target indoor use specified for Method 2.
3. Convert the unadjusted CII GPCD target (the Baseline CII Water Use times 0.9) to an average daily volume by multiplying by Service Area Population.
4. Subtract the average daily volume calculated in Step 2 from the unadjusted CII daily volume calculated in Step 3.
5. Divide the result from Step 4 by Service Area Population to give the adjusted Baseline CII Water Use in GPCD for use in calculating the water use target for Method 2.

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Methodology 8: Criteria for Adjustments to Compliance Daily Per Capita Water Use

Introduction

In writing SBx7-7, the legislature recognized that factors outside of a water supplier's control could cause water use during a compliance year (2015 or 2020) to exceed the supplier's water use target despite the supplier's efforts to improve water use efficiency. The legislature addressed this issue in Section 10608.24 (d) by providing three possible adjustments water suppliers can use in calculating compliance daily per capita water use. These include adjustments for:

1. weather that is different from the average of the baseline years,
2. changes in water use due to new or expanded institutions, or economic activity beyond what is accounted for by population growth, and
3. extraordinary events such as increased water use to fight a large fire.

Methodology 8 was not included in the October 2010 publication of the Methodologies for Calculating Baseline and Compliance Urban per Capita Water Use as the methodology was not required for water suppliers to complete their 2010 urban water management plans.

Methodology 8 describes the process that urban retail water suppliers must follow if they are eligible and choose to adjust their compliance daily per capita water use. The methodology addresses:

- The conditions under which suppliers are eligible to adjust compliance year daily per capita water use,
- The order in which adjustments are to be made in cases where water suppliers consider making more than one adjustment, and
- The information suppliers must provide to justify and calculate the compliance year adjustments.
- Adjustment calculations and application to the supplier's compliance daily per-capita water use.

Definition of Adjustments to Compliance Daily Per Capita Water Use

Section 10608.24 of SBx7-7 states:

(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.

Water Code Section 10608.12(i) defines "*Institutional water user*" as *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.*

Water Code Section 10608.12(d) defines "*Commercial water user*" as "*a water user that provides or distributes a product or service.*"

Water Code Section 10608.12(h) defines "*Industrial water user*" as "*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.*"

Water Code Section 10608.12(e) defines "*Compliance daily per-capita water use*" as "*the gross water use during the final year of the reporting period.*"

Overview of Process and Sequence of Adjustments to Compliance Daily Per Capita Water Use

The adjustments described in this chapter are to be applied to compliance year water use. No adjustments should be made to the target water use and/or baseline water use. Baseline and target water use may be revised, but the revisions should be based on revised population and/or gross water use data or the selection of another target method. Directions for baseline and target revisions are provided in Methodologies 1, 2 and 3. Water suppliers may choose to adjust their compliance year water use regardless of the target method chosen.

Prior to making compliance year adjustments, the supplier should first calculate an unadjusted compliance daily per capita water use following Methodologies 1, 2 and 4 for gross water use, service area population and compliance daily per capita water use. Suppliers who are eligible and elect to exclude industrial process water use from the gross water use calculations must also exclude industrial process water use from all other calculations for compliance year adjustments.

Methodology 8 separates substantial changes in institutional water use into two adjustments (CWC 10608.24 (c)). Adjustment 1 is used for substantial changes to institutional water use due to extraordinary events such as fire suppression. Increases in institutional water use due to extraordinary events are primarily unmetered and are one time or rare occurrences. Adjustment 2 is used for substantial changes in institutional water use due to new or expanded operations, as well as substantial changes in commercial or industrial water use due to increased business output and economic development. The increase in institutional water use due to new or expanded operations should be based on metered data and the adjustment should be addressed in a manner consistent with adjustments for increased commercial or industrial water use.

Adjustments to compliance daily per capita water use should be applied via one of the two optional sequences:

Option 1

Step 1) Adjustments for institutional water use resulting from fire suppression services and other extraordinary events.

Step 2) Adjustments to institutional water use resulting from new or expanded operations and adjustments to commercial or industrial water use resulting from increased business output and economic development.

Step 3) Adjustments for differences in evapotranspiration and rainfall between the baseline and compliance reporting periods.

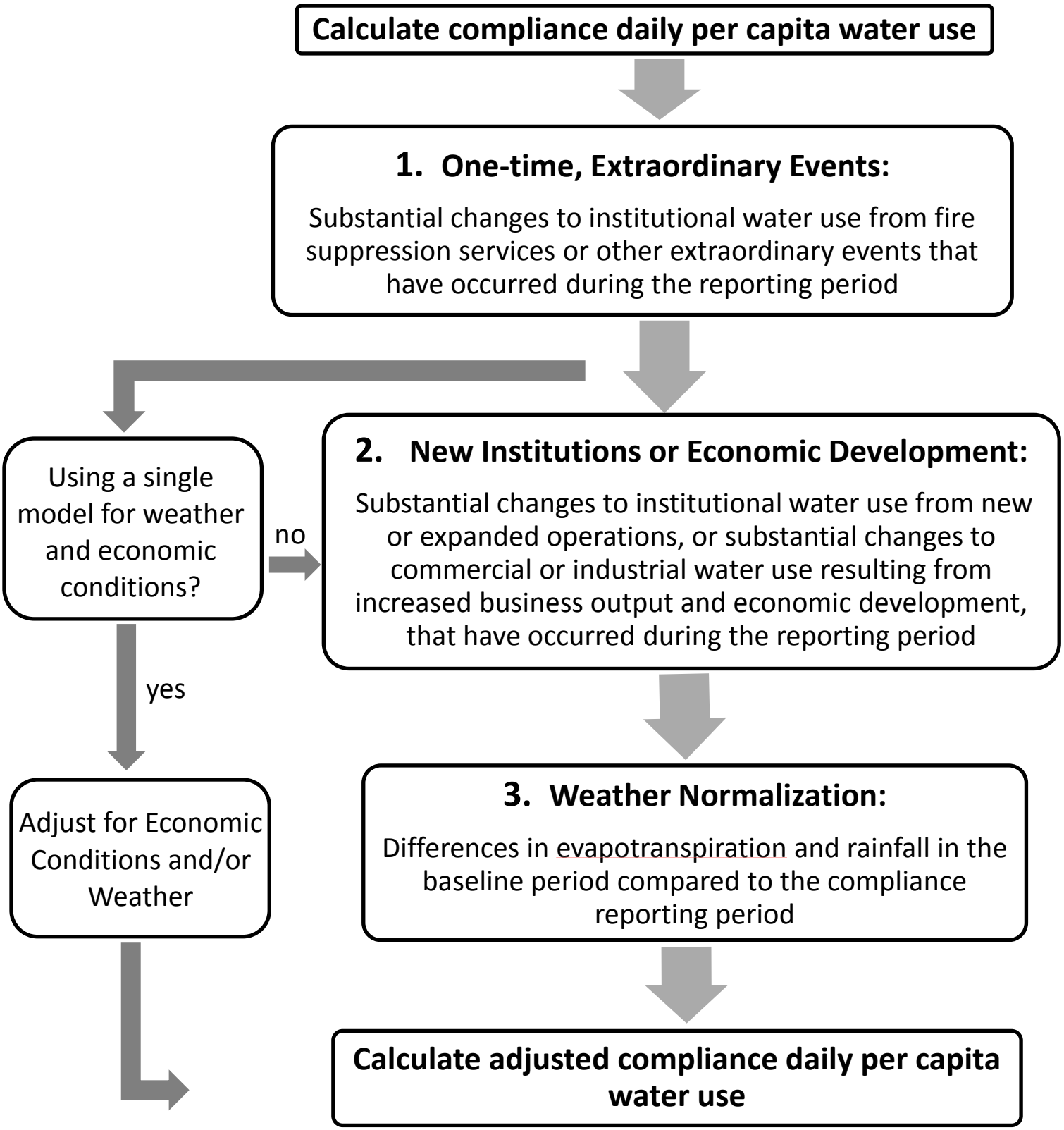
Option 2

It may be possible to develop both the weather and economic adjustments from a single statistical model. Within this single statistical model approach, water suppliers have the option of taking a credit due to unusual weather, or a credit due to differences in economic conditions, or both. They do not have to take both credits, even though both weather and economic effects could be included in the statistical model. However, water suppliers cannot engage in double-counting, by first adjusting their Gross Water Use for unusual economic conditions, then fitting a dual weather/economy normalization model to already adjusted Gross Water Use. Therefore the following sequence should be followed:

Step1) Adjust Gross Water Use for fire suppression services and other extraordinary institutional events.

Step 2) Further adjust Gross Water Use, using results of the statistical model fitted to Gross Water Use developed in Step 1 above, for differences in evapotranspiration, rainfall and economic factors between the baseline and compliance reporting periods.

Sequence of Adjustments to Compliance Daily Per Capita Water Use



Adjustment 1: Calculating Adjustments to Institutional Water Use for Fire Suppression Services or Other Extraordinary Events

This category of adjustments accounts for one-time, extraordinary events that substantially increased a supplier's compliance year water use and did not occur on a regular basis either in the baseline or compliance reporting years. The institutional water use associated with extraordinary events, such as fire suppression is typically unmetered. To document an unmetered increase in water use, water suppliers can use water production records during the time of the event, as shown in Step 2A below. Adjustments for metered institutional use for extraordinary events should use Step 2B. Adjustments to metered commercial or industrial use for extraordinary events should use Adjustment 2.

Step 1: Document that the event was extraordinary – for both metered and unmetered institutional water use

Water suppliers must provide documentation illustrating that the event and its associated increase in water use was a one time or rare event and did not occur on a regular basis in the baseline period. This documentation can be in the form of fire department or emergency service records, media reports or other historical records.

Step 2: Document Use for Extraordinary Event

Step 2A: For Unmetered Institutional Water Use:

Since water use under this category of adjustment is rarely metered, water suppliers shall estimate the water use for the extraordinary event through other available data such as water treatment plant production data, or drawdown from storage in the distribution system. When using water production data, the water supplier must calculate the increase in production for the time period of the event relative to the normal water production for that time period. The calculation of increased water use is only for water that is included in the gross water calculation. Water that is used for the extraordinary event that comes from sources outside of the distribution area defined in the gross water use calculation should not be included in the extraordinary event adjustment calculations.

Step 2B: For Metered Institutional Water Use:

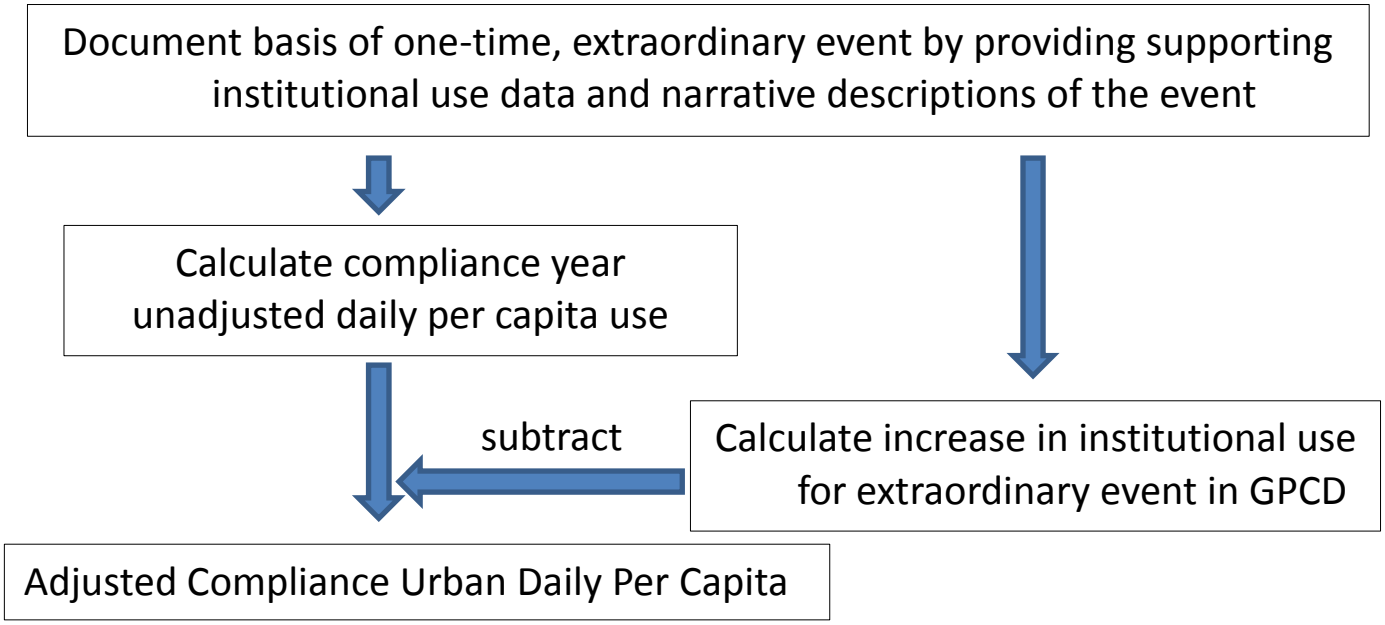
The water supplier shall document the quantity of increased water use during the time period of the extraordinary event, relative to the normal water use for that time period and relative to the use immediately prior and after the event, based on metered data. The calculation of increased water use is only for water that is included in the gross water calculation. Water that is used for the extraordinary event that comes from sources outside of the distribution area defined in the gross water use calculation should not be included in the extraordinary event adjustment calculations.

Step 3: Calculate Extraordinary Event Institutional Water Use Adjustment

3.1. Convert the volume of water from Step 2A or Step 2B into daily per capita water use units. Divide the volume of water from Step 2A or Step 2B by the water supplier's compliance year service area population and 365 days of the year. This constitutes the extraordinary event institutional water use adjustment, in GPCD.

3.2. Calculate the compliance year water use adjusted for an extraordinary event. Subtract the extraordinary event water use in units of GPCD (Step 3.1) from the unadjusted compliance year daily per capita water use. The result is the compliance year daily per capita water use adjusted for an extraordinary event.

Institutional Use Adjustment for Fire Suppression or Extraordinary Events



Example 1A: Extraordinary Fire Suppression Services
Water Supplier A provides water for fire suppression services. In the interim compliance year 2015, there was an extraordinary fire event that lasted for five days named the Cleveland Fire. Fire Department reports and a local news story documented that the fire was the largest and longest lasting fire the region had experienced. Using water treatment plant records, Water Supplier A estimated that the quantity of treated water produced and sent into the distribution system during the five-day period increased by 8.6 million gallons (MG).

The extraordinary fire suppression adjustment is calculated as 2.4 GPCD by dividing 8.6 MG by the water supplier's 2015 service area population of 10,000 and further divided by 365 days of the year. Water Supplier A had calculated an unadjusted compliance daily per capita water use of 148.2 GPCD. Subtracting 2.4 GPCD, Water Supplier A's compliance daily per capita water use adjusted for the Cleveland fire is 145.8 GPCD.

Adjustment 2: Calculating Adjustments to Institutional Water Use from New or Expanded Operations or Adjustments to Commercial or Industrial Water Use Resulting from Increased Business Output and Economic Development

Adjustment 2 accounts for substantial changes to commercial, industrial or institutional (CII) water use due to new or expanded institutional water use or increased commercial and/or industrial business output and economic development. The increase in water use due to economic activity should be as a result of factors outside of service area population growth. Therefore, any adjustment may primarily be driven by institutions and businesses that serve nonresident populations and customers. Examples include the expansion of a college or university that draws students from outside the service area, a regional mall, or a business making a product that is sold broadly.

Increases in water use from institutions or businesses that are started or expanded to serve a new residential development or a larger population are not eligible for this adjustment. Since compliance year water use is reported on a daily per capita basis, the increase in water use for institutions or businesses which expand to serve larger population should not increase the compliance year daily per capita water use.

To account for possible changes in water use between sectors (an industrial facility becoming a commercial facility) water suppliers must first document that the percentage reduction in CII water use between baseline years and the compliance year is less than the percent reduction from the baseline water use required to meet the supplier's water use target. Water suppliers whose CII percentage reduction is greater than the water use target percent reduction are not eligible for Adjustment 2.

Water suppliers must document that the increase in commercial, industrial or institutional water use proposed for adjustment has increased due to new or expanded institutions, or to increased business output and economic development. Water suppliers can document the increase through measures such as institutional enrollments, employment statistics, and statistics on business output or trade.

Step 1: Quantify CII Water Use Reduction

This step is intended to identify CII water use that may be eligible for adjustment. The calculations also separate the effect of changes in CII water use due to new or expanded institutions and economic development from that due to growth in population. Only the former may be eligible for this adjustment.

1.1. Calculate daily CII water use per capita for both the baseline period and the compliance year(s) using Methodology 7. Calculate the percentage reduction achieved in CII daily per capita water use for the compliance year(s) compared to the baseline period.

1.2. If the percentage reduction in CII daily per capita water use in the compliance year(s) (from Step 1.1) equals or exceeds the target percentage reduction in baseline GPCD, no economic adjustment can be made.

Step 2: Documentation of Basis and Supporting Data for the Adjustment

Water suppliers making the economic adjustment must provide both a narrative description and numeric water use data to substantiate the adjustments. The data must illustrate the specific changes in commercial, industrial, or institutional water use by customer accounts where possible, between the baseline period and the compliance year(s).

2.1 For substantial changes to institutional water use from new or expanded operations:

2.1.1 Provide a narrative that identifies and documents new institutions or existing institutions with expanded operations within the service area that have caused institutional water use to increase significantly during the reporting period.

2.1.2 Calculate the change in the compliance year's institutional daily per capita water use compared to that in the baseline period.

2.2 For substantial changes to commercial or industrial water use from increased business output and economic development:

2.2.1 Provide a narrative that identifies and explains the increase in commercial and industrial water use within the service area due to increased business output and economic development.

2.2.2 Document the change in compliance year(s) daily commercial and/or industrial water use per capita compared to that in the baseline period.

Step 3: Correlation with Institutional or Economic Development Indicators

Demonstrate that the increase in commercial, industrial, or institutional water use is directly related to a net expansion in institutional operations, or a net increase in business output and economic development between the supplier's baseline period and compliance year(s). This step is necessary to prove that the increase in CII use is driven by economic factors and is not a result of service area population growth or change in water management.

3.1 Provide the institutional or economic development indicators that correlate with the increase in commercial, industrial, or institutional water use documented in Step 2. Institutional or economic indicators include:

- Employment statistics that show net increases in the specific commercial, industrial, or institutional sectors.[1]
- Net increase in institutional enrollment, census, employment, or occupancy.
- Net gain in measures of business output and economic development such as production volume, sales tax revenue, U.S. Department of Commerce measures of retail trade, or other indicators of manufacturing and wholesale activities.[2]
- Net gain in measures of non-resident population such as hotel occupancy rates, or measures of consumer expenditures such as attendance at entertainment venues.
- Net increase in commercial sector activities due to an extraordinary mega-event, such as hosting the Olympic Games or Super Bowl, during the compliance year.
- Other economic indicators.

3.2 Adjust any economic indicators measured in dollars for inflation by using the Consumer Price Index (CPI) (reference to specific CPI series, such as USACPIBLS).

Step 4: Document CII Water Use Reduction Programs and Efforts

Describe, in the demand management section of the supplier's urban water management plan or through the California Urban Water Conservation Council BMP reports submitted in lieu of the UWMP Demand Management Measures (DMM) section, the CII demand management measures the water supplier has implemented. Water suppliers not implementing CII DMMs are not eligible for the compliance year economic adjustment.

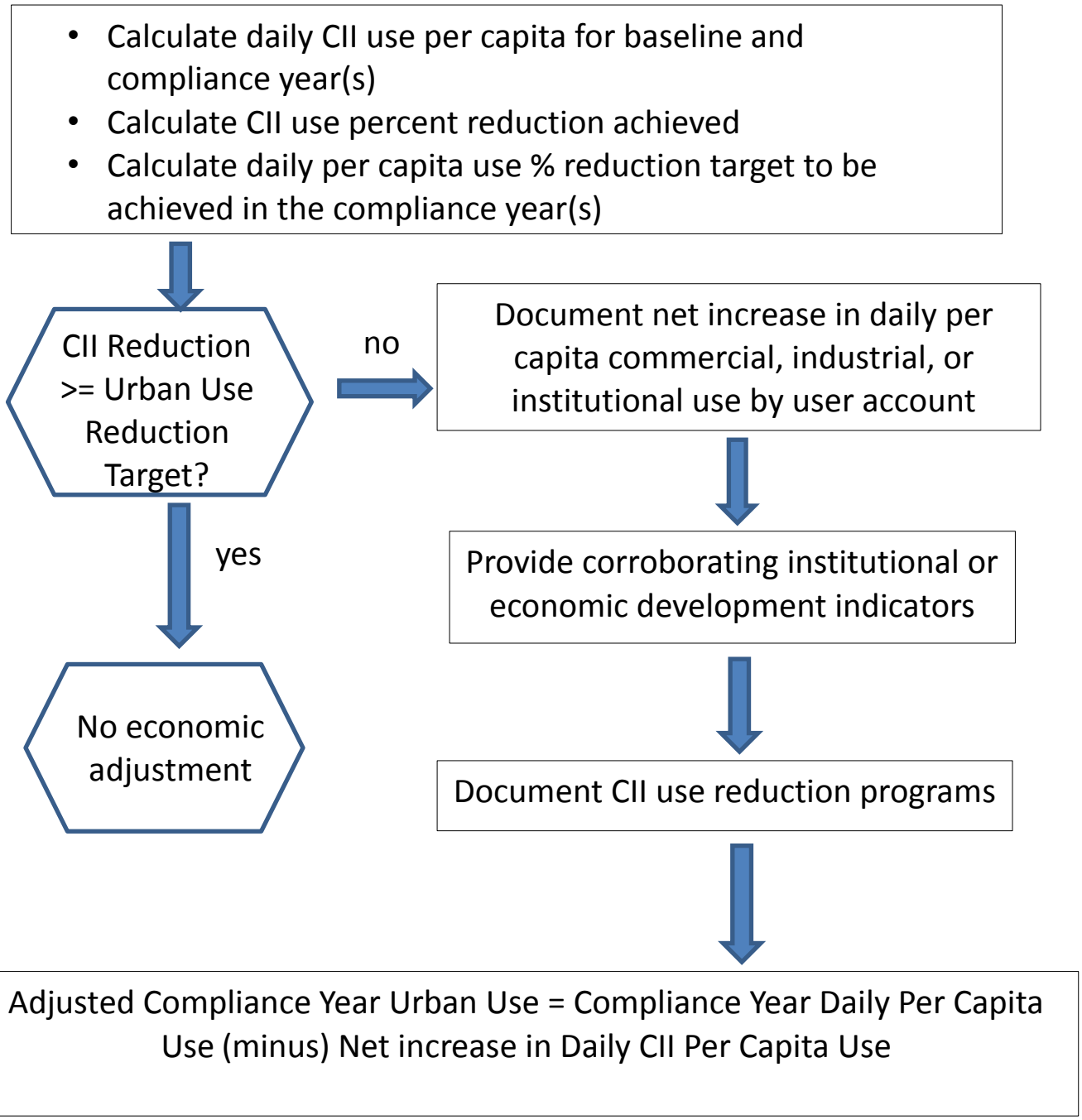
Step 5: Calculate the Economic Adjustments due to New or Expanded Institutions or Increased Business Output and Economic Development

To calculate the compliance daily per capita water use adjusted for economic activity, subtract the net change in commercial daily per capita water use, institutional daily per capita water use, or industrial daily per capita water use (from Step 2.1.2 or 2.2.2) from the unadjusted compliance year daily per capita water use.

[1] Employment Development Department publishes monthly labor force data by county.

[2] Board of Equalization publishes annual reports on local sales tax distribution by city.

CII Use Adjustment from Expanded Institutional Operations or Increased Business Output and Economic Development



Example 2A: Expanded Operation at a University Campus
Retail Water Supplier A provides water service to University U. Between the baseline period and year 2020, University U expanded its campus and enrollment increased. Water Supplier A needs to compare the CII use reduction achieved in year 2020 to the 2020 urban water use reduction target, after factoring in the increase in resident population. The CII use reduction achieved in 2020 was 16 percent, smaller than the 2020 urban water use reduction target of 19 percent. Water Supplier A is thus eligible to make the expanded institutional water use adjustment.

Although institutional water use for University U increased between 2020 and the baseline period, the net increase in total institutional water use within Water Supplier A's service area was only 2.3 GPCD, due to downsizing of some government facilities. The net institutional water use adjustment is 2.3 GPCD, to be subtracted from the 2020 urban daily per capita water use.

Example 2B: Increased Industrial Water Use Resulting from Increased Business Output and Economic Development
There was a net increase in industrial water use between the baseline period and year 2015 within the service area of Water Supplier B. After performing the eligibility step, the supporting data show a decrease of industrial water use in the Fruit and Vegetable Preserving and Specialty Food Manufacturing Sector and an increase in industrial water use in the Dairy Product Manufacturing Sector. The net increase in daily per capita industrial water use is 1.2 GPCD and constitutes the economic adjustment to be subtracted from the compliance year unadjusted daily per capita water use.

Example 2C: Increased Commercial Water Use Resulting from Economic Development
In the intervening years between the baseline period and the compliance reporting year 2015, City C built a new sports stadium. There were also new commercial establishments such as retail businesses and restaurants built in the area. Existing commercial establishments also reported a general increase in sales. The water supplier that serves City C performed the eligibility step and provided supporting economic data including: employment figures, sales revenue, hotel occupancy rates, and stadium attendance records. Commercial water use in the Entertainment, Food Sales and Hospitality sectors show a net increase of Y GPCD in year 2015 compared to the baseline period. This Y GPCD is the magnitude of economic adjustment that can be subtracted from the 2015 urban daily per capita water use to arrive at the adjusted 2015 compliance urban daily per capita water use.

Adjustment 3: Approach to Calculating Adjustments due to Differences in Evapotranspiration and Rainfall and Economic Activity in the Baseline Period Compared to the Compliance Reporting Year

It is expected that water suppliers who adjust compliance year GPCD for unusual weather conditions will use a statistical model calibrated using data from their selected baseline period. Suppliers may also choose to include economic and other factors in their statistical model in addition to weather to develop a model-based correction for unusual economic conditions.

DWR has evaluated several different approaches using real-world water supplier data for normalizing compliance year GPCD. As a result of that exploratory modeling, DWR is in a position to offer several guidelines for water suppliers to follow while developing their weather normalization, or their combined weather/economic normalization models. DWR will examine several model efficacy metrics to determine if the adjustments to compliance GPCD generated by said models meet DWR's criteria. However, DWR's exploratory modeling included a thorough evaluation of the California Urban Water Conservation Council's (Council's) weather normalization model and criteria and DWR has decided to waive the documentation and criteria requirements below (except for input data documentation submission) for 2015 if water suppliers use the Council's model as specified by the Council.

DWR Modeling Criteria

DWR has separated out the criteria into the following topics:

A. Model Specification Criteria

B. Regression Output Criteria

A. Model Specification Criteria

These criteria are intended to ensure that weather and economic adjustments are produced using an appropriate method and that the resulting adjustments are used in an appropriate manner. For each criterion that is not met, an explanation with justification must be provided for DWR review.

1. To weather normalize compliance year GPCD, total water demand (Gross Water Use) should be modeled at the monthly level, or finer. Analysis at an annual level does not provide an adequate basis for weather normalization because the impact of weather on water demand is considerably attenuated. Water suppliers wishing to develop a combined weather/economic normalization model should include the unemployment rate or labor-force participation rate, as economic variables in these models. If these economic measures are available at a monthly level then monthly data should be used. Otherwise, annual economic values can be used by interpolating to obtain monthly values.

2. Water demands normally show variation from month to month, hitting minimum in winter and maximum in summer. This normal variation due to climate should be captured by inclusion of eleven monthly indicator variables or other alternatives, such as Fourier harmonics in the model specification. If one or more of these eleven monthly indicator variables is excluded, suppliers must demonstrate that excluded coefficients had p-values exceeding 0.32 (or t-statistic below 1). This criterion will help ensure that variation due to climate is not erroneously attributed to weather.

3. Changes in service area characteristics, including conservation, rate increases, rate structure changes, etc. may cause GPCD to change over time. The model specification should, at a minimum, include a trend term to capture these effects. Service areas that have experienced rapid changes (rate structure changes, large price increases, drought restrictions, metering of formerly unmetered accounts, etc.) coinciding with the model calibration period should include additional variables in their model to capture the impact of these changes instead of simply relying on a trend variable. The inclusion of these additional variables becomes paramount if suppliers choose to develop a fully-specified water demand model for estimating the impact of weather and economic factors on demand, especially if suppliers discover that estimation of statistically significant relationships between demand and economic factors requires extending the model calibration period beyond the 10-year baseline period.

4. Unusual weather can cause deviations in the month-to-month variation in water demand that is otherwise considered normal for a given area. The model specification should include measures of weather to capture these deviations. Weather measures should include rainfall and temperature, or rainfall and evapotranspiration; should be representative of the majority of the population in the service area; and should be from a credible source. DWR will make available these weather measures with statewide coverage.

5. Models should be specified to account for the seasonal differences in the influence of weather on water demand. Weather variables for at least three seasons should be included in the model specification.

6. If water suppliers choose to construct a combined weather/economic normalization model, economic measures should include the unemployment rate or the labor force participation rate for the geographic jurisdiction that best overlaps with a water supplier's service area. These data should be obtained from a state or federal source.

7. For the purpose of model estimation, the dependent variable (monthly GPCD) should first be logarithmically transformed. The log specification has a long, respected pedigree in water demand modeling. A model with a log transformed dependent variable generates compliance year corrections (because of deviations in weather and/or economic variables between the compliance year and baseline period) directly in the form of percentages, making it a more robust way for adjusting compliance year GPCD. Example calculations are provided in DWR's Weather Normalization Guidelines document.

B. Regression Output Criteria

These criteria are intended to ensure that, by meeting specific objectives, the model results can be reasonably applied to adjust compliance year GPCD.

1. Model coefficients associated with the weather and, if applicable, economic variables that are used for adjusting compliance year GPCD should be statistically significant at the 5 percent level at a minimum (p-value <= 0.05).
2. Normality assumption for linear regression should not be unacceptably violated. Any appropriate statistical test for residual normality may be deployed. Up to four outliers may be excluded before performing the test. The test should demonstrate at a significance level of 10 percent that model residuals are distributed normally. If the normality test is still not met, suppliers should use Robust Regression or other appropriate techniques instead of Ordinary Least Squares Regression techniques to estimate their statistical model. See DWR's Weather Normalization Guidelines document for guidance.
3. Coefficients for the weather and economic variables should have the expected sign.
4. The model's annual GPCD prediction error band should be within ±10% (i.e., the percentage difference between actual and predicted annual GPCD across all the years included in the model calibration time period is within±10%).

Modeling Documentation

The following documentation is necessary to allow DWR to verify that the modeling and regression output criteria have been met.

Water suppliers must submit:

1. Source and type of weather data with an explanation justifying how these are representative of the supplier's service area.
2. Source and type of economic data, if a dual weather/economic model is being estimated, with an explanation justifying how these are representative of the supplier's service area.
3. Model description, including dependent and independent variables used in the model.
4. Statistical software used.
5. Model input data.
6. Regression output, including R-square and estimated regression coefficients with the significance (p-values) of each coefficient.
7. Indicators of the credibility of regression significance metrics.
   - Probability plot of model residuals.
   - Results from a test of residual normality.
   - Results from a test for serial correlation.

8. Percent difference between actual GPCD and model predicted GPCD for each year during the baseline period (error band for the model calibration years).
9. Compliance year weather adjustment calculations and, if used, economic adjustment calculations.

Model and weather data options are described in greater detail in DWR's Weather Normalization Guidelines document.

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Methodology 9: Regional Compliance

According to Sections 10608.20(a)(1) and 10608.28, urban retail water suppliers may plan, comply, and report on a regional basis, an individual basis or both. Each group of water suppliers agreeing among themselves to plan, comply, and report as a region is referred to in this methodology as a "regional alliance."

Legislative Guidance for Regional Compliance

Section 10608.20(a)(1) states:

> *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.*

Section 10608.28 states:

> *(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.*

Criteria for Water Suppliers that May Report and Comply as a Region

To form a regional alliance, water suppliers must meet at least one of the following criteria:

- Water suppliers are recipients of water from a common wholesale water supplier. For this purpose, the State Water Project and the Central Valley Project are not considered wholesale water suppliers. Wholesale water suppliers are not required to establish and meet targets for daily per capita water use. Wholesale water suppliers serving in the role of a regional alliance are representing the urban retail water suppliers that are members of the alliance and compliance with a regional target is on behalf of the member suppliers and not the wholesaler supplier itself.
- Water suppliers are partners with a common regional agency authorized to plan and implement water conservation.
- Water suppliers are part of a regional water management group as defined in Water Code section 10537.
- Water suppliers are part of an integrated regional water management funding area, which for this purpose is interpreted to mean an Integrated Regional Water Management (IRWM) planning area.
- Water suppliers are located in the same hydrologic region, which for this purpose refers to the 10 hydrologic regions as shown in the California Water Plan. For situations where water suppliers may serve areas in more than one hydrologic region, the majority of each water supplier's Service Area Population must be in the hydrologic region being identified as a regional alliance.
- Water suppliers join through appropriate geographic scales for which these methodologies can be applied. For this provision, water suppliers' service area boundaries must be contiguous.

Tiered Regional Alliances

In general, urban retail water suppliers can belong to only one regional alliance for the purpose of establishing and complying with urban water use targets. An exception is when regional alliances are tiered so that the members of the smallest alliance are all members of the larger alliance or alliances.

FIGURE 6: EXAMPLE OF TIERED ALLIANCES

Figure 6 illustrates tiered alliances. For example, supplier A forms an alliance with suppliers B and C (Alliance 1). Supplier A cannot also form an alliance with suppliers J and K unless the A, J, K alliance were to include B and C as well. Water suppliers D, E, and F could comply as regional Alliance 2, or include supplier G and comply as regional Alliance 3. Alternatively, all suppliers in Figure 6 could comply as Alliance 5. The tiered alliance requirements are only for compliance with urban water use targets and do not apply to other regional water management activities or partnerships.

Calculation of Targets and Compliance GPCD

Calculation of Regional Targets

Water suppliers wishing to test compliance regionally are permitted to do so. Water suppliers in a regional alliance have three options for calculating their regional targets.

Under the first option, which preserves maximum flexibility at the supplier level, each supplier in a regional alliance would first calculate its individual target as if it were complying individually. These individual targets should then be weighted by each supplier's population and averaged over all members in the alliance to obtain the regional target.[24] For the 2011 urban water management plans, suppliers may use their current population data for generating the regional targets. However, for testing compliance in 2015 and 2020, the population weighting of the individual targets must be based upon the compliance-year population data. A retail water supplier may update its target in 2015 (see Water Code section 10608.20(g) and any such modifications made to individual targets after 2011 must be incorporated into updated regional targets and reported in the compliance year 2015. For those urban retailers or alliances that choose method 2 for developing a target (see Water Code section 10608.20(b)(2)), the target must be revised and reported in 2020. A modification in any individual target or a change in membership in a regional alliance will require a recalculation of the regional target.

A second approach for an alliance to calculate a regional target is to sum up the individual supplier's gross water use and service area populations to develop regional gross water use and population. The alliance would then calculate regional base daily per capita use and choose one target method to calculate a regional target. Alliances must have all their members use the same baseline period.

A third approach is to calculate regional gross water use or population directly for the entire regional alliance area. Regional base daily per capita use and a regional water use target would then be derived. Like the second approach, members of alliances using this approach must use the same baseline period and the same target method. A regional alliance must meet the requirements of Section 10608.22. The regional target may not exceed 95 percent of the region's 5-year Base Daily Per Capita Water Use. Methodology 3: Base Daily Per Capita Water Use describes in detail the interpretation and calculations required under Section 10608.22.

Calculation of Regional Compliance Daily Per Capita Water Use

Gross Water Use and Service Area Population must be reported for each supplier during the compliance year. If applicable, adjustments for evapotranspiration and rainfall, fire suppression, and changes in distribution area should be made for each individual water supplier. Adjustments to Gross Water Use for extraordinary economic growth can be

[24] Assume there are (N) suppliers in an alliance, with individual targets (T_1, T_2, … , T_N) and population (P_1, P_2, … , P_N), where the subscript on the individual targets and population denote the identity of each supplier. Then, total population in a regional alliance (RP) becomes:
$RP = P_1 + P_2 + \ldots + P_N$
The regional target (RT) can be derived as a weighted average of the individual supplier targets as follows:
$RT = (P_1 * T_1 + P_2 * T_2 + \ldots + P_N * T_N)/RP$

applied either to the individual supplier's data or to the aggregate regional alliance data (but not both), depending upon availability of suitable data and methods. Regional compliance daily per capita water use shall be calculated as the aggregate regional Gross Water Use divided by the aggregate Service Area Population.

Data Reporting for a Regional Alliance

A regional alliance must send DWR a letter stating that an alliance has been formed and provide a list of the water supplier members. This letter should be sent by July 1, 2011, for alliances formed before submitting 2010 urban water management plans, or in ninety days after an alliance has been formed after July 1, 2011. In the case of tiered alliances, a retail water supplier cannot be cited as a member of a regional alliance unless it acknowledges its membership in that alliance in its urban water management plan.

DWR will collect data pertaining to regional alliances through three documents: (1) through the individual supplier urban water management plans; (2) through the regional urban water management plans; and (3) through the regional alliance reports.

Individual Supplier Urban Water Management Plans

All members of a regional alliance must include the following data in their individual urban water management plans unless they are participating in a regional urban water management plan (applicable urban water management plan dates are shown in parentheses):

- A list of all of its regional alliances. If a supplier is a member of tiered alliances, it must name all the alliances it is a member of
- Baseline Gross Water Use and Service Area Population (2010, 2015, 2020)
- Individual 2020 Urban Water Use Target (2010, 2015, 2020) and Interim 2015 Urban Water Use Target (2010)
- Compliance Year Gross Water Use (2015 and 2020) and Service Area Population (2010, 2015, 2020)
- Adjustments to Gross Water Use in the compliance year (2015, 2020)
- Water suppliers who choose Target Method 2 also must provide Landscaped Area Water Use and Baseline CII Water Use data (2010, 2015, 2020)
- Water Suppliers who choose Target Method 4 must provide the components of calculation as required by Target Method 4. Appendix B describes Target Method 4 and the regional compliance reporting that applies to that method (2010, 2015, 2020)

Regional Urban Water Management Plans

Members of regional alliance can forgo submitting individual urban water management plans and instead submit a regional urban water management plan. These regional urban water management plans are different from the regional alliance reports in that they must meet all the urban water management plan reporting requirements. The water use target data can be reported in the regional plan in either of two ways:

- The regional plan can report all the data elements that are now required to be included in the individual urban water management plans pertaining to this program (see section above titled Individual Supplier Urban Water Management Plans), for each supplier in the alliance. It would also report the same data elements aggregated over all members in the alliance.
- The regional plan may report some data elements only in aggregate for the alliance as a whole (not for each individual member). For example, the plan may report Service Area Population only for the regional alliance if the regional population data are more accurate or available. If the Service Area Population is only reported on a regional basis, then Base Daily per Capita Use, Compliance Daily per Capita Use, and Urban Water Use Targets would be calculated and reported only on a regional basis. Water suppliers that are part of a regional alliance that only reports a regional population can only develop a regional Urban Water Use Target and comply with this target regionally. Developing individual targets and testing compliance at the individual level is not possible unless an individual Service Area Population is calculated.

Regional Alliance Report

For regional alliances that do not submit a regional urban water management plan, DWR will require a regional alliance report. This report shall include all the water use target data elements that are now required to be included in the individual urban water management plans (see section above titled Individual Supplier Urban Water Management Plans) for each supplier in the alliance, and also shall include the alliance-level aggregates.

Memoranda of Understanding or Agreements for Regional Alliances

DWR will not review or approve the terms of memoranda of understanding (MOUs) or legal agreements that water suppliers use to create and manage regional alliances. However, terms of the agreements shall be consistent with all applicable sections of the Water Code. DWR will presume that water suppliers understand the consequences if partner suppliers withdraw from a regional alliance.

Compliance Assessment for Water Suppliers Belonging to a Regional Alliance

Compliance will be assessed based upon how an individual retail water supplier performs relative to its individual target or how the retail water supplier's regional alliance performs as a whole relative to its regional target. Wholesale suppliers are not themselves subject to compliance assessment. The following guidelines will be used to assess compliance:

- If a regional alliance meets its regional target, all suppliers in the alliance will be deemed compliant. For tiered alliances, if a smaller alliance does not meet its water use target, the member agencies can still be in compliance if a larger alliance is in compliance. Conversely, members of a smaller alliance can be in compliance if the smaller alliance complies while the larger alliance fails. If a regional alliance fails to meet its regional

target, water suppliers in the alliance that meet their individual targets will be deemed compliant.

- Water suppliers in alliances that meet neither their individual targets nor their regional targets will be deemed noncompliant. These suppliers can still apply for grant funds if their application is accompanied by a plan that demonstrates how the funds being sought will bring them into compliance with their targets (Section 10608.56).

Withdrawal from a Regional Alliance before 2020

If a water supplier withdraws from a regional alliance, the withdrawing water supplier must then comply individually. The water suppliers remaining in the regional alliance must revise regional baseline and target data and alliance membership in the subsequent UWMP plan. The memorandum of understanding or other legal agreements governing the alliance may define additional consequences or remedies.

Dissolution of a Regional Alliance before 2020

If a regional alliance dissolves before 2020, each affected water supplier must then comply individually or form or join another alliance. An affected water supplier that had not previously submitted an individual urban water management plan (for example, if it had participated in a regional urban water management plan for a regional alliance that has dissolved) has to submit an urban water management plan or a regional water management plan. The memorandum of understanding or other legal agreements governing the alliance may define additional consequences or remedies.

APPENDIX A

Model Water Efficient Landscape Ordinance Definitions and Calculations

The Model Water Efficient Landscape Ordinance (MWELO) was originally added to the California Code of Regulations (Title 23, Division 2, Chapter 2.7) in 1992 and revised in 2009 and 2015. Paragraph 492.4 defines the calculation of Maximum Applied Water Allowance (MAWA).

For landscaped areas that are installed on or after December 1, 2015, the MAWA equation and all applicable definitions of terms from the 2015 ordinance are provided below.

Maximum Applied Water Allowance (MAWA) = (ETo) (0.62) [(ETAF x LA) + [(1-ETAF x SLA)]

Maximum Applied Water Allowance (MAWA) is in gallons per year

ETo = Reference Evapotranspiration (inches per year). Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance so that regional differences in climate can be accommodated. Reference Evapotranspiration values for each location can be found in Appendix A of the 2015 Model Water Efficient Landscape Ordinance.

0.62 = Conversion Factor (from inches/year to gallons/sq ft/year)

0.55 = ET Adjustment Factor for residential landscapes (ETAF). When applied to reference evapotranspiration, the ETAF "adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape."

0.45 = ET Adjustment Factor for non-residential landscapes (ETAF). When applied to reference evapotranspiration, the ETAF "adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape."

LA = Landscaped Area including SLA (square feet), which includes "all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation)."

[(1-ETAF x SLA)] = Additional Water Allowance for Special Landscape Area (SLA), resulting in an effective ETAF for SLA of 1.0.

SLA = Special Landscaped Area (square feet), which is defined as "an area of the landscape dedicated solely to edible plants, recreational areas, areas irrigated with recycled water, or water features using recycled water."

For landscaped areas that are installed on or after January 1, 2010, up to November 30, 2015 the MAWA equation and all applicable definitions of terms from the 2010 ordinance are provided below.

Maximum Applied Water Allowance (MAWA) = (ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)]

Maximum Applied Water Allowance (MAWA) is in gallons per year

ETo = Reference Evapotranspiration (inches per year). Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance so that regional differences in climate can be accommodated." Reference Evapotranspiration values for each location can be found in Appendix A of the 2010 Model Water Efficient Landscape Ordinance.

0.62 = Conversion Factor (from inches/year to gallons/sq ft/year)

0.7 = ET Adjustment Factor (ETAF). When applied to reference evapotranspiration, the ETAF "adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape."

LA = Landscaped Area including SLA (square feet), which includes "all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation)."

0.3 = Additional Water Allowance for Special Landscape Area (SLA), resulting in an effective ETAF for SLA of 1.0.

SLA = Special Landscaped Area (square feet), which is defined as "an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface."

For landscaped areas that are installed before January 1, 2010, the MAWA equation and all applicable definition of terms from the original 1992 version of the ordinance are as follows:

Maximum Applied Water Allowance (MAWA) = (ETo) (0.62) (0.8 x LA)

Maximum Applied Water Allowance (MAWA) is in gallons per year

ETo = Reference Evapotranspiration (inches per year). Reference Evapotranspiration values for each location can be found on page 38.10 of the Model Water Efficient Landscape Ordinance.

0.62 = Conversion Factor (from inches/year to gallons/sq ft/year)

0.8 = ET Adjustment Factor (ETAF). When applied to reference evapotranspiration, the ETAF "adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape."

LA = Landscaped area includes the entire parcel less the building footprint, driveways, non-irrigated portions of parking lots, landscapes such as decks and patio, and other non-porous areas. Water features are included in the calculation of the landscaped area. Areas dedicated to edible plants, such as orchards or vegetable gardens are not included.

APPENDIX B

PROVISIONAL METHOD 4 FOR DETERMINING WATER USE TARGETS

DWR developed Provisional Target Method 4 in accordance with Water Code Section 10608.20(b)(4). Urban retail water suppliers that adopt Target Method 4 to determine their 2020 urban water use target must use the provisional procedures described in this document. This target method has been developed with the assistance of the California Urban Water Conservation Council, the California State Water Resources Control Board, and the Urban Stakeholder Committee, composed of technical experts and representatives of water suppliers and environmental and other organizations.

Water Code Section 10608.20(d) provides that DWR will update Target Method 4 by December 31, 2014. It is anticipated that improvements will be made to the target method based on new data and analytical techniques in the update. Provisional Target Method 4 described here will be in effect until the update by 2014.

A Target Method 4 Calculator (Calculator) using an Excel spreadsheet has been developed for use with Provisional Target Method 4. The Calculator will be required to accomplish some of the procedures for this method. Other procedures may be accomplished without use of the Calculator but have been incorporated into the Calculator to automate the calculation of the 2020 target.

Overview

The overall framework for Provisional Target Method 4 is described in this section. Details are presented in the Detailed Procedures section. For this target method, savings are assumed between the baseline period and 2020 due to metering of unmetered water connections and achieving water conservation measures in three water use sectors.

The 2020 water use target for individual urban water suppliers is determined by Equation 1 in units of gallons per capita per day (GPCD).

Equation 1

Urban Water Use Target	=	Base Daily per Capita Water Use	-	Total Savings

The base daily per capita water use is separated into three sectors for the purpose of Target Method 4:

1. Residential indoor
2. Commercial, Industrial, and Institutional (CII)
3. Landscape water use, water loss, and other unaccounted-for water

Because accurate methods are not generally available to estimate the water use in these three sectors, a standard of 70 GPCD is assumed for residential indoor water use. For the purpose of Target Method 4, CII water use does not include landscape irrigation use served by dedicated landscape irrigation meters. Dedicated landscape meters often serve large commercial or institutional irrigation sites such as golf courses, parks, or school grounds. CII water use includes irrigation water use served by mixed use water meters. Landscape irrigation water use in item 3 above is composed of residential irrigation and irrigation served by dedicated landscape irrigation meters or connections. Unaccounted for water is water that is lost in water distribution systems. Other unaccounted for water may include unmetered uses such as construction water or discrepancies in water meter accuracy. For simplification, water loss and other unaccounted for water are referred to as "water loss" in this document.

For the purpose of Target Method 4 it is necessary to calculate landscape water use and loss using Equation 2. The units for Equation 2 are GPCD.

Equation 2

Landscape and Water Loss per Capita Use	=	Base Daily per Capita Water Use	-	Standard Indoor Residential 70 gpcd	-	CII Water Use

Potential water savings are estimated for each of these water use sectors and for reduced water use due to installation of meters on unmetered connections, as shown in Equation 3. The units for Equation 3 are GPCD.

Equation 3

Total Savings	=	Metering Savings	+	Indoor Residential Savings	+	CII Savings	+	Landscape and Water Loss Savings

Detailed Procedures

Step 1: Baseline Water Use and Midpoint Year

The Base Daily Per Capita Water Use is an average calculated for the base period selected by the urban retail water supplier, as described in Methodology 3 in *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (Methodologies Report).

The data required for some of the following steps of Target Method 4 must be provided for the midpoint year for the base period. For a base period with an even number of years, the midpoint year will be the 12 months preceding the midpoint date.

The Calculator has been designed for calendar years. For water suppliers that choose to use a fiscal year reporting basis, the Calculator can be adapted by entering the fiscal year period representing the year designated in the Calculator.

Step 2: Metering Savings

For service areas with water service connections without water meters, a water supplier must estimate the total amount of water delivered to unmetered connections during the midpoint year of the baseline period. The metering savings is calculated using Equation 4.

Equation 4

$$\text{Metering Savings, GPCD} = \frac{\text{Water Deliveries to Unmetered Connections in Midpoint Baseline Year, gallons} \times 0.20}{\text{Service Area Population in Midpoint Baseline Year} \times 365 \text{ days}}$$

Step 3: Indoor Residential Savings

Indoor residential water savings are estimated based upon anticipated increases in the installation of more efficient toilets, residential clothes washers, and showerheads. The savings estimates are based on a comparison of saturation levels of fixtures, at certain water use efficiencies, during the midpoint year of the baseline period and with saturation goals in 2020. Separating toilets in single-family and multi-family dwellings, the 2020 saturation goals for the four plumbing fixtures categories are listed in Table 1.

Table 1. Saturation Goals for Indoor Residential Fixtures

Fixture Type	2020 Saturation Goals
Single-family Toilets	85% 1.28 gal/flush toilets 15% average flush volume at midpoint baseline year
Multi-family Toilets	85% 1.28 gal toilets 15% average flush volume at midpoint baseline year
Residential Washers	85% Water Factor (WF) of 6 15% average WF at midpoint baseline year
Residential Showerheads	95% low flow showerheads 5% non-low flow showerheads

There are two alternatives for calculating indoor residential water savings, one using the Target Method 4 Calculator based on historic data for a water supplier and the other using a default savings of 15 GPCD.

Alternative 1:

To calculate indoor residential savings using the historic data of an individual water supplier the following types of data may be required to enter into the Calculator:

- Persons per household
- Toilets per household
- Showers per household
- Numbers of single- and multi-family dwelling units for years 1991 through the midpoint of baseline period
- Population residing in group quarters in the midpoint year of baseline period
- Either (1) numbers of efficient toilets, showerheads, and clothes washers either distributed, installed, or credited through incentives, such as rebates for years 1991 through the midpoint of baseline period or (2) saturation levels of fixtures at various efficiencies at the midpoint year of the baseline period

After entry of the required data, the Calculator will determine the indoor residential savings in terms of GPCD.

Alternative 2:

If a water supplier does not have historic data for the midpoint baseline and prior years, the supplier can use a default indoor residential water savings of 15 GPCD. While the Calculator allows Alternative 2 for the convenience of calculating the target, if this alternative is chosen, the Calculator is unnecessary.

Determining whether to use the default value, the following information may be helpful. In developing the Provisional Target Method 4, a random sample of 52 water suppliers were selected to test the Calculator. The sample represented a variety of climatic and demographic characteristics. An analysis of this random sample developed a statewide average savings from the four indoor residential elements was 14.1 GPCD, with a range of

7.9 to 16.8 GPCD. Sixty percent of the suppliers fell within the range of 13.1 to 15.1 GPCD and 15 percent exceeded 15.1 GPCD.

Step 4: CII Savings

CII water savings is assumed to be 10 percent of baseline CII water use, which is an average for the baseline period calculated following procedures in Methodology 7 in the Methodologies Report. For the purpose of Target Method 4, CII water use does not include landscape irrigation served by dedicated landscape irrigation meters. CII savings is calculated using Equation 5.

Equation 5

CII Savings, GPCD	=	Average baseline CII Water Use, GPCD	X	0.10

Step 5: Landscape Irrigation and Water Loss Savings

Landscape water use and water loss savings are based on a 21.6 percent reduction in that sector for all suppliers. The 21.6 percent reduction was derived from an analysis of 52 sample water suppliers and was calculated so that the average water use target for the 52 sample suppliers would meet the overall goal of a cumulative 20% percent savings. Landscape water use and water loss use is calculated using Equation 2 and represents irrigation water use, water loss and other unaccounted-for water uses. The savings is calculated using
Equation 6.

Equation 6

Landscape water use and Water Loss Savings, GPCD	=	Landscape Irrigation and Water Loss Sector Use per Eq. 2, GPCD	X	0.216

Step 6: Total Savings

The total savings required using Target Method 4 is calculated using Equation 3, entering results from Steps 2 through 5.

Step 7: 2020 Urban Water Use Target

The 2020 urban water use target in GPCD is calculated using Equation 1.

Example

To illustrate the procedures for the Provisional Target Method 4, calculations for the fictional Whispering Glen Water District are shown below.

Step 1. Baseline Water Use and Midpoint Year

Whispering Glen Water District selected a 10-year baseline period of 1996-2005. The average base daily per capita water use for this period was calculated to be 228 GPCD. The savings are calculated based on water deliveries in the midpoint year of the baseline period, which is 2000.

Step 2. Metering Savings (Equation 4)

Metering Savings, GPCD	=	Water Deliveries to Unmetered Connections in Midpoint Baseline Year, gallons: 2,541,637,800	X	0.20	=	8.3 GPCD		
		Service Area Population in Midpoint Baseline Year: 168,118	X	365 days				

Step 3. Indoor Residential Savings

Alternative 1, Target Method 4 Calculator:

Total Indoor Residential Savings, GPCD	=	Single-family Toilets Savings, GPCD: 7.6	+	Multi-family Toilets Savings, GPCD: 1.6	+	Residential Washers Savings, GPCD: 6.0	+	Residential Showers Savings, GPCD: 1.3	=	16.5 GPCD		

Alternative 2, Default:

Total Indoor Residential Savings, GPCD	=	15.0 GPCD

Step 4. CII Savings (Equation 5)

CII Savings, GPCD	=	Average baseline CII Water Use, GPCD: 69.0	X	0.10	=	6.9 GPCD

Step 5. Landscape Irrigation and Water Loss Savings (Equations 2 and 6)

Landscape Irrigation and Water Loss Sector Use, GPCD	=	2000 Base Daily per Capita Water Use: 227.7	–	Standard Indoor Residential Use, GPCD: 70.0	–	CII Water Deliveries in Midpoint Baseline Year, GPCD: 68.7	=	89.0 GPCD

Landscape Irrigation and Water Loss Savings, GPCD	=	Landscape Irrigation and Water Loss Sector Use, GPCD: 89.0	X	0.216	=	19.2 GPCD

Step 6. Total Savings

Because there are two alternative methods to calculate indoor residential savings, there are two alternatives for total savings, calculated using Equation 3.

Alternative 1 (based on Target Method 4 Calculator for Indoor Residential Savings):

Total Savings, GPCD	=	Metering Savings, GPCD: 8.3	+	Indoor Residential Savings, GPCD: 16.5	+	CII Savings, GPCD: 6.9	+	Landscape Irrigation and Water Loss Savings, GPCD: 19.2	=	50.9 GPCD

Alternative 2 (based on default for Indoor Residential Savings):

Total Savings, GPCD	=	Metering Savings, GPCD	+	Indoor Residential Savings, GPCD	+	CII Savings, GPCD	+	Landscape Irrigation and Water Loss Savings, GPCD	=	49.4 GPCD
		8.3		15.0		6.9		19.2		

Step 7. 2020 Urban Water Use Target (Equation 1)

Alternative 1 (based on Target Method 4 Calculator for Indoor Residential Savings):

Urban Water Use Target, GPCD	=	Base Daily per Capita Water Use, GPCD	–	Total Savings, GPCD	=	176.8 GPCD
		227.7		50.9		

Alternative 2 (based on default for Indoor Residential Savings):

Urban Water Use Target, GPCD	=	Base Daily per Capita Water Use, GPCD	–	Total Savings, GPCD	=	178.3 GPCD
		227.7		49.4		

APPENDIX C

Regulations for Implementing Process Water Provision

California Code of Regulations
Title 23. Waters
Division 2. Department of Water Resources
Chapter 5.1. Water Conservation Act of 2009
Article 1. Industrial Process Water Exclusion in the Calculation of Gross Water Use

§596. Process Water

(a) An urban retail water supplier that has a substantial percentage of industrial water use in its service area is eligible to exclude the process water use of existing industrial water customers from the calculation of its gross water use to avoid a disproportionate burden on another customer sector.

(b) The Department of Water Resources will review and assess the implementation of this article and may amend its provisions upon considering the recommendations of the Commercial, Industrial and Institutional task force convened pursuant to section 10608.43 of the Water Code.

Note: Authority cited: Section 10608.20, Water Code. Reference: Sections 10608.20(e), 10608.24(e), and 10608.43 Water Code.

§596.1. Applicability and Definitions

(a) Sections 596.2 through 596.5 describe criteria and methods whereby an urban retail water supplier may deduct process water use when calculating their gross water use in developing their urban water use targets.

(b) The terms used in this article are defined in this subdivision.

(1) "commercial water user" means a water user that provides or distributes a product or service. Examples include commercial businesses and retail stores, office buildings, restaurants, hotels and motels, laundries, food stores, and car washes.

(2) "disadvantaged community" means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.

(3) "distribution system" means a water conveyance system that delivers water to a residential, commercial, or industrial customer and for public uses such as fire safety where the source of water is either raw or potable water.

(4) "drought emergency" means a water shortage emergency condition that exists when there would be insufficient water for human consumption, sanitation and fire protection, as set forth in California Water Code Section 350-359 and Government Code Section 8550-8551.

(5) "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:

(A) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier

(B) The net volume of water that the urban retail water supplier places into long-term storage

(C) The volume of water the urban retail water supplier conveys for use by another urban water supplier

(D) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24 of the Water Code.

(6) "incidental water use" means water that is used by industry for purposes not related to producing a product or product content or research and development. This includes incidental cooling, air conditioning, heating, landscape irrigation, sanitation, bathrooms, cleaning, food preparation, kitchens, or other water uses not related to the manufacturing of a product or research and development.

(7) "industrial water user" means a manufacturer or processor of materials as defined by the North American Industry Classification System (NAICS) code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development. An industrial water user is primarily involved in product manufacturing and processing activities and research and development of products, such as those related to chemicals, food, beverage bottling, paper and allied products, steel, electronics and computers, metal finishing, petroleum refining, and transportation equipment. Data centers dedicated to research and development are considered an industrial water user.

(8) "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.

(9) "local agency" means any municipality, such as a city or county government or public water agency.

(10) "non-industrial water use" means gross water use minus industrial water use.

(11) "process water" means water used by industrial water users for producing a product or product content, or water used for research and development. Process water includes, but is not limited to; the continuous manufacturing processes, water used for testing, cleaning and maintaining equipment. Water used to cool machinery or buildings used in the

manufacturing process or necessary to maintain product quality or chemical characteristics for product manufacturing or control rooms, data centers, laboratories, clean rooms and other industrial facility units that are integral to the manufacturing or research and development process shall be considered process water. Water used in the manufacturing process that is necessary for complying with local, State and federal health and safety laws, and is not incidental water, shall be considered process water. Process water does not include incidental, commercial or institutional water uses.

(12) "recycled water" means water 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:

(A) For groundwater recharge, including recharge through spreading basins, water supplies that are all of the following:

(i) Metered.

(ii) Developed through planned investment by the urban water supplier or a wastewater treatment agency.

(iii) Treated to a minimum tertiary level.

(iv) 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.

(B) For reservoir augmentation, water supplies that meet the criteria of subdivision (A) and are conveyed through a distribution system constructed specifically for recycled water.

(13) "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.

(14) "Urban Water Management Plan" means a plan prepared pursuant to California Water Code Division 6 Part 2.6. 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.

Note: Authority cited: Section 10608.20, Water Code. Reference: Sections 10608.12, 10608.20, and 10631Water Code.

§596.2 Criteria for Excluding Industrial Process Water Use from Gross Water Use Calculation

When calculating its gross water use, an urban retail water supplier may elect to exclude up to 100 percent of process water use from its gross water use if any one of the following criteria is met in its service area:

(a) Total industrial water use is equal to or greater than 12 percent of gross water use, or

(b) Total industrial water use is equal to or greater than 15 gallons per capita per day, or

(c) Non-industrial water use is equal to or less than 120 gallons per capita per day if the water supplier has self-certified the sufficiency of its water conservation program with the Department of Water Resources under the provisions of section 10631.5 of the Water Code, or

(d) The population within the supplier's service area meets the criteria for a disadvantaged community.

Note: Authority cited: Section 10608.20, Water Code. Reference: Sections 10608.20 and 10608.24 Water Code.

§596.3. Quantification and Verification of Total Industrial Process and Industrial Incidental Water.

The volumes of water uses in Section 596.3 shall be for the same period as urban water suppliers calculate their baseline daily per capita water use and reported in their Urban Water Management Plans.

(a)The volume of process water use shall be verified and separated from incidental water use.

(1) To establish a baseline for determining process water use, urban retail water suppliers shall calculate the process water use over a continuous ten year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) Verification of process water can be accomplished by metering, sub-metering or other means determined suitable and verifiable by the urban retail water supplier and reported in their Urban Water Management Plans and reviewed by the Department of Water Resources.

(b) In cases where the urban retail water supplier provides only a portion of an industrial water user's water supply, the urban retail water supplier shall prorate the volume of process water use excluded from gross water use by considering the average share of the industrial water use that it supplied over a continuous ten year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

The verification of the proportion of industrial water use supplied shall be accomplished through metering, sub-metering, or other means determined suitable and verifiable by the

urban water supplier such as audits, historic manufacturing output or suppliers' billing records and as reported in their Urban Water Management Plans.

> *Example. If an urban water supplier delivered only 60 percent of the average annual water used by an industrial water user, the urban supplier can only use that 60 percent of industrial water in determining if it is eligible to exclude process water from its gross water use; and if it is eligible, it can exclude only 60 percent of the volume of process water used by such industrial water user.*

Note: Authority cited: Section 10608.20, Water Code. Reference: Sections 10608.20 and 10608.24 Water Code.

§596.4. Existing Industrial Customers

When implementing this article, urban retail water suppliers shall meet the following provisions:

(a) Any ordinance or resolution adopted by an urban retail water supplier after November 10, 2009 shall not require industrial water customers existing as of November 10, 2009 to undertake changes in product formulation, operations, or equipment that would reduce process water use.

(b) An urban retail water supplier may encourage existing industrial customers to utilize water efficiency technologies, methodologies, or practices through the use of financial and technical assistance.

(c) This section shall not limit an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

Note: Authority cited: Section 10608.20, Water Code. Reference: Section 10608.26 Water Code.

§596.5 New and Retrofitted Industries

Local agencies and water suppliers shall encourage newly-established and retrofitted industries to adopt industry-specific water conservation practices and technologies where such technologies exist.

Note: Authority cited: Section 10608.20, Water Code. Reference: Section 10608.20 Water Code.

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APPENDIX B

Public Agency Notification

Public Hearing Notice

Resolution Adopting 2015 Urban Water Management Plan

Minutes of June 22, 2016 Board Meeting

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VISTA IRRIGATION DISTRICT
1391 Engineer Street • Vista • California 92081-8840
Phone: (760) 597-3100 • Fax: (760) 598-8757
www.vid-h2o.org

March 17, 2016

Graham Mitchell
City Manager
City of Escondido
201 North Broadway
Escondido, CA 92025

Re: 2015 Urban Water Management Plan Preparation

Dear Mr. Mitchell:

This letter is to inform you that the Vista Irrigation District is updating its Urban Water Management Plan (UWMP). California State law requires urban water suppliers to update their UWMPs every five years and notify the cities and counties within their service area that a plan is being prepared. The District must adopt an updated UWMP by July 1, 2016 and submit the adopted plan to the California Department of Water Resources by August 1, 2016.

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Please feel free to contact Brett Hodgkiss, Administrative Services Manager, at (760) 597-3162 or bhodgkiss@vid-h2o.org, if you have any questions or would like additional information.

Sincerely,

Roy A. Coox
General Manager

cc: Jay Petrek, Director of Community Development

VISTA IRRIGATION DISTRICT
1391 Engineer Street • Vista • California 92081-8840
Phone: (760) 597-3100 • Fax: (760) 598-8757
www.vid-h2o.org

March 17, 2016

Patrick Johnson
City Manager
City of Vista
200 Civic Center Drive
Vista, CA 92084

Re: 2015 Urban Water Management Plan Preparation

Dear Mr. Johnson:

This letter is to inform you that the Vista Irrigation District is updating its Urban Water Management Plan (UWMP). California State law requires urban water suppliers to update their UWMPs every five years and notify the cities and counties within their service area that a plan is being prepared. The District must adopt an updated UWMP by July 1, 2016 and submit the adopted plan to the California Department of Water Resources by August 1, 2016.

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Sincerely,

Roy A. Coox
General Manager

cc: John Conley, Director of Community Development

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1391 Engineer Street • Vista • California 92081-8840
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March 17, 2016

Michelle Skaggs Lawrence
City Manager
City of Oceanside
300 North Coast Highway
Oceanside, CA 92054

Re: 2015 Urban Water Management Plan Preparation

Dear Ms. Lawrence:

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Sincerely,

Roy A. Coox
General Manager

cc: Rick Brown, Development Services Director

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1391 Engineer Street • Vista • California 92081-8840
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March 17, 2016

Jack Griffin
City Manager
City of San Marcos
1 Civic Center Drive
San Marcos, CA 92069

Re: 2015 Urban Water Management Plan Preparation

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Sincerely,

Roy A. Coox
General Manager

cc: Mark Little, Development Services Director

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1391 Engineer Street • Vista • California 92081-8840
Phone: (760) 597-3100 • Fax: (760) 598-8757
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March 17, 2016

Helen Robbins-Meyer
Chief Administrative Officer
County of San Diego
1600 Pacific Coast Highway, Room 209
San Diego, CA 92101

Re: 2015 Urban Water Management Plan Preparation

Dear Ms. Robbins-Meyer:

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Sincerely,

Roy A. Coox
General Manager

cc: Mark Wardlaw, Director of Planning and Development Services

VISTA IRRIGATION DISTRICT
1391 Engineer Street • Vista • California 92081-8840
Phone: (760) 597-3100 • Fax: (760) 598-8757
www.vid-h2o.org

June 1, 2016

Graham Mitchell
City Manager
City of Escondido
201 North Broadway
Escondido, CA 92025

Re: 2015 Urban Water Management Plan

Dear Mr. Mitchell:

Enclosed for your review and comment is a CD containing a draft of the Vista Irrigation District's 2015 Urban Water Management Plan (2015 Plan). The California Urban Water Management Planning Act (Act), included in the California Water Code requires urban water suppliers to prepare an urban water management plan and update it every five years. The Vista Irrigation District is required to prepare and adopt the 2015 Plan by July 1, 2016 and submit it to the California Department of Water Resources by August 1, 2016.

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If you have any questions regarding the 2015 Plan, please contact Mr. Hodgkiss at (760) 597-3162.

Sincerely,

Roy A. Coox
General Manager

Enclosure

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www.vid-h2o.org

June 1, 2016

Bill Martin
Director of Community Development
City of Escondido
201 North Broadway
Escondido, CA 92025

Re: 2015 Urban Water Management Plan

Dear Mr. Martin:

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Roy A. Coox
General Manager

Enclosure

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June 1, 2016

Chris McKinney
Director of Water Utilities
City of Escondido
201 North Broadway
Escondido, CA 92025

Re: 2015 Urban Water Management Plan

Dear Mr. McKinney:

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Roy A. Coox
General Manager

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June 1, 2016

Patrick Johnson
City Manager
City of Vista
200 Civic Center Drive
Vista, CA 92084

Re: 2015 Urban Water Management Plan

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Roy A. Coox
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June 1, 2016

John Conley
Director of Community Development
City of Vista
200 Civic Center Drive
Vista, CA 92084

Re: 2015 Urban Water Management Plan

Dear Mr. Conley:

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June 1, 2016

Michelle Skaggs Lawrence
City Manager
City of Oceanside
300 North Coast Highway
Oceanside, CA 92054

Re: 2015 Urban Water Management Plan

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General Manager

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June 1, 2016

Rick Brown
Development Services Director
City of Oceanside
300 North Coast Highway
Oceanside, CA 92054

Re: 2015 Urban Water Management Plan

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Roy A. Coox
General Manager

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June 1, 2016

Jack Griffin
City Manager
City of San Marcos
1 Civic Center Drive
San Marcos, CA 92069

Re: 2015 Urban Water Management Plan

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June 1, 2016

Helen Robbins-Meyer
Chief Administrative Officer
County of San Diego
1600 Pacific Coast Highway
Rm 209
San Diego, CA 92101

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June 1, 2016

Mark Wardlaw
Director of Planning and Devleopment Services
County of San Diego
5201-B Ruffin Road
San Diego, CA 92123

Re: 2015 Urban Water Management Plan

Dear Mr. Wardlaw:

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June 1, 2016

Devin Vodicka
Superintendent
Vista Unified School District
1234 Arcadia Avenue
Vista, CA 92084

Re: 2015 Urban Water Management Plan

Dear Mr. Vodicka:

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June 1, 2016

Sean Sterchi
District Engineer
SWRCB, Division of Drinking Water
1350 Front Street
Rm 2050
San Diego, CA 92101

Re: 2015 Urban Water Management Plan

Dear Mr. Sterchi:

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June 1, 2016

Michael Stenlicht
General Manager
Encina Wastewater Authority
6200 Avenida Encinas
Carlsbad, CA 92011

Re: 2015 Urban Water Management Plan

Dear Mr. Stenlicht:

Enclosed for your review and comment is a CD containing a draft of the Vista Irrigation District's 2015 Urban Water Management Plan (2015 Plan). The California Urban Water Management Planning Act (Act), included in the California Water Code requires urban water suppliers to prepare an urban water management plan and update it every five years. The Vista Irrigation District is required to prepare and adopt the 2015 Plan by July 1, 2016 and submit it to the California Department of Water Resources by August 1, 2016.

The enclosed 2015 Plan provides an evaluation of the existing and planned sources of water necessary to reliably meet demands under normal, single-dry year and multiple-dry year conditions in five-year increments for the 20-year term required by the Act. The 2015 Plan also contains documentation related to the implementation of SBX 7-7 ("20 X 2020" water conservation requirements).

A public hearing on the 2015 Plan and the implementation of SBX 7-7 is scheduled to be held at the District office located at 1391 Engineer Street in Vista on June 22, 2016 at 9:00 AM. Written comments will be received until 9:00 AM on June 22, 2016. Comments on the 2015 Plan can be e-mailed to Brett Hodgkiss at bhodgkiss@vid-h2o.org or by writing to: Vista Irrigation District, ATTN: Urban Water Management Plan, 1391 Engineer Street, Vista, CA 92081-8840.

If you have any questions regarding the 2015 Plan, please contact Mr. Hodgkiss at (760) 597-3162.

Sincerely,

Roy A. Coox
General Manager

Enclosure

VISTA IRRIGATION DISTRICT
1391 Engineer Street • Vista • California 92081-8840
Phone: (760) 597-3100 • Fax: (760) 598-8757
www.vid-h2o.org

June 1, 2016

Maureen Stapleton
General Manager
San Diego County Water Authority
4677 Overland Avenue
San Diego, CA 92123

Re: 2015 Urban Water Management Plan

Dear Ms. Stapleton:

Enclosed for your review and comment is a CD containing a draft of the Vista Irrigation District's 2015 Urban Water Management Plan (2015 Plan). The California Urban Water Management Planning Act (Act), included in the California Water Code requires urban water suppliers to prepare an urban water management plan and update it every five years. The Vista Irrigation District is required to prepare and adopt the 2015 Plan by July 1, 2016 and submit it to the California Department of Water Resources by August 1, 2016.

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If you have any questions regarding the 2015 Plan, please contact Mr. Hodgkiss at (760) 597-3162.

Sincerely,

Roy A. Coox
General Manager

Enclosure

VISTA IRRIGATION DISTRICT
1391 Engineer Street • Vista • California 92081-8840
Phone: (760) 597-3100 • Fax: (760) 598-8757
www.vid-h2o.org

June 1, 2016

Re: 2015 Urban Water Management Plan

Dear Interested Party:

Enclosed for your review and comment is a CD containing a draft of the Vista Irrigation District's 2015 Urban Water Management Plan (2015 Plan). The California Urban Water Management Planning Act (Act), included in the California Water Code requires urban water suppliers to prepare an urban water management plan and update it every five years. The Vista Irrigation District is required to prepare and adopt the 2015 Plan by July 1, 2016 and submit it to the California Department of Water Resources by August 1, 2016.

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If you have any questions regarding the 2015 Plan, please contact Mr. Hodgkiss at (760) 597-3162.

Sincerely,

Roy A. Coox
General Manager

Enclosure

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The San Diego Union-Tribune

Bill To:
Vista Irrigation District - CU00467333
1391 Engineer Street
Vista,CA 92081

This space is for the County Clerk's Filing Stamp

PROOF OF PUBLICATION
(2015.5 C.C.P.)

STATE OF ILLINOIS
County of Cook

I am a citizen of the United States and a resident of the County aforesaid; 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 of

The San Diego Union Tribune

Formerly known as the North County Times and UT North County and which newspaper has been adjudicated as a newspaper of general circulation by the Superior Court of the County San Diego, State of California, for the City of Oceanside and the City of Escondido, Court Decree numbers 172171, 171349, for the County of San Diego that the notice of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of the said newspaper and not in any supplement thereof on the following dates, to-wit:

Jun 13, 2016; Jun 19, 2016

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

Dated at Chicago, Illinois on this
20th day of June, 2016

Erin Julian
Legal Advertising

Proof of Publication of

See Attached

4238561

The San Diego Union-Tribune

NOTICE OF PUBLIC HEARING

In accordance with Sections 10642 and 10608.26 of the California Water Code, notice is hereby given that the Vista Irrigation District (VID) will hold a public hearing to consider and adopt the 2015 Urban Water Management Plan (Plan). Copies of the Plan, which includes SBX 7-7 compliance documentation, are available for public review at the following location:

VISTA IRRIGATION DISTRICT
1391 Engineer Street
Vista, California
92081-8840

The public hearing will be held at 9:00 AM, or as soon thereafter as the matter may be heard, on Wednesday, June 22, 2016 at the above noted location.

VID encourages the active involvement of the diverse social, cultural, and economic elements of the population within its service area. For further information concerning the Plan, contact Brett Hodgkiss at the Vista Irrigation District or telephone (760) 597-3162. Written comments will be received at the above address until 9:00 AM on June 22, 2016.

/s/Lisa R. Soto, Secretary
Board of Directors
VISTA IRRIGATION DISTRICT

RESOLUTION NO. 16-16

RESOLUTION OF THE BOARD OF DIRECTORS
OF THE VISTA IRRIGATION DISTRICT
ADOPTING THE 2015 URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Urban Water Management Planning Act (Act), Water Code section 10610 et seq., mandates that every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare and update an Urban Water Management Plan (UWMP) at least once every five years in years ending in five and zero, subject to Water Code Section 10621, which requires urban water suppliers to adopt their 2015 urban water management plans by July 1, 2016; and

WHEREAS, the Vista Irrigation District (District) is an urban water supplier for the purposes of the Act, and approved and adopted its most recent UWMP on June 28, 2011, and submitted its 2010 UWMP to the California Department of Water Resources (DWR); and

WHEREAS, Senate Bill 7 of the Seventh Extraordinary Session (SBX 7-7), Water Code section 10608 et seq., established requirements for urban retail water suppliers to prepare urban water use targets in accordance with the goals of SBX 7-7 to reduce statewide per capita water use by ten (10) percent by 2015 and twenty (20) percent by 2020; and

WHEREAS, the District is an "urban retail water supplier" for the purposes of SBX 7-7 because it directly provides potable municipal water to more than 3,000 end users; and

WHEREAS, in accordance with the requirements of the Act and SBX 7-7, the District has prepared its 2015 UWMP and has undertaken certain coordination, notice, public involvement, public comment, and other procedures in relation to its 2015 UWMP; and

WHEREAS, as authorized by Water Code section 10620(e) of the Act, the District has prepared its 2015 UWMP with its own staff, and in consultation with other governmental agencies, and has utilized and relied upon the DWR Guidebook to Assist Urban Water Suppliers to Prepare a 2015 UWMP (March 2016) and the DWR Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (March 2016) in preparing its 2015 UWMP; and

WHEREAS, in accordance with Water Code section 10621, the District notified cities and the county within which the District provides water supplies that it was reviewing and considering amendments to its UWMP on March 17, 2016; and

WHEREAS, the draft 2015 UWMP was made available for public review on the District's web site and at its office located at 1391 Engineer Street in Vista during normal business hours and was distributed to cities and the county within which the District provides water supplies on June 1, 2016; and

WHEREAS, in accordance with applicable law, including Water Code sections 10608.26 and 10642 and Government Code section 6066, a notice of public hearing regarding the District's 2015 UWMP was published in a newspaper of general circulation within its service area on June 13, 2016 and June 19, 2016; and

WHEREAS, in accordance with applicable law, a public hearing was held on June 22, 2016 at 9:00 AM, or soon thereafter, in the District's Board Room at 1391 Engineer Street, Vista, CA 92081, in order to receive public comment relative to the 2015 UWMP; and

WHEREAS, pursuant to said public hearing on the 2015 UWMP, the District encouraged the active involvement of diverse social, cultural and economic elements of the population within its service area with regard to the preparation of the UWMP, and considered the testimony and evidence presented at that public hearing.

NOW, THEREFORE, the Board of Directors of the Vista Irrigation District does resolve as follows:

1. The District hereby adopts the 2015 Urban Water Management Plan as presented to the Board by District staff, which Plan incorporates 2015 and 2020 water use targets as well as a discussion regarding the implementation of policies and programs to assist the District in meeting the water use targets and the potential economic impacts of implementing said policies and programs.

2. The General Manager is hereby authorized and directed to include a copy of this Resolution in the District's 2015 Urban Water Management Plan and, in accordance with Water Code section 10644(a), to file the 2015 Urban Water Management Plan with the California Department of Water Resources, the California State Library, and any city or county within which the District provides water supplies within thirty (30) days of the adoption of this Resolution.

3. The General Manager is hereby authorized and directed, in accordance with Water Code section 10645, to make the 2015 Urban Water Management Plan available for public review during normal business hours not later than thirty (30) days after filing a copy of the plan with the California Department of Water Resources.

4. The General Manager is hereby authorized and directed, in accordance with Water Code section 10635(b), to provide that portion of the 2015 Urban Water Management Plan prepared pursuant to Water Code section 10635(a) to any city or county within which the District provides water supplies not later than sixty (60) days after filing a copy with the California Department of Water Resources.

5. The General Manager is hereby authorized and directed to implement the components of the 2015 Urban Water Management Plan in accordance with the Urban Water Management Planning Act and SBX 7-7, including, but not limited to, the District's water conservation programs and its water shortage contingency plan.

PASSED AND ADOPTED, by the Board of Directors of the Vista Irrigation District on this 22nd day of June, 2016, by the following roll call vote:

AYES: Directors Miller, Dorey, Reznicek, MacKenzie, and Vásquez
NOES: None
ABSTAIN: None
ABSENT: None

Richard Vásquez, President
Board of Directors

ATTEST:

Marian Schmidt, Assistant Secretary
Board of Directors
VISTA IRRIGATION DISTRICT

MINUTES OF THE ADJOURNED MEETING OF THE
BOARD OF DIRECTORS OF
VISTA IRRIGATION DISTRICT

June 22, 2016

An Adjourned Meeting of the Board of Directors of Vista Irrigation District was held on Wednesday, June 22, 2016, at the offices of the District, 1391 Engineer Street, Vista, California.

1. CALL TO ORDER

President Vásquez called the meeting to order at 9:00 a.m.

2. ROLL CALL

Directors present: Miller, Vásquez, Dorey, Reznicek, and MacKenzie.

Directors absent: None.

Staff present: Eldon Boone, General Manager; Marian Schmidt, Assistant Secretary of the Board; Brett Hodgkiss, Assistant General Manager; Brian Smith, Director of Engineering; Frank Wolinski, Operations and Field Services Manager; Sherry Thorpe, Safety & Risk Manager; Marlene Kelleher, Finance Manager; Randy Whitmann, Engineering Project Manager; Steve Wuerth, System Controls Supervisor; and Ben Parks, Water Quality Operator III. General Counsel Joel Kuperberg was also present.

Other attendees: VID Special Counsel John Carter.

3. PLEDGE OF ALLEGIANCE

Director Reznicek led the pledge of allegiance.

4. APPROVAL OF AGENDA

16-06-58	***Upon motion by Director MacKenzie, seconded by Director Dorey and unanimously carried (5 ayes: Miller, Vásquez, Dorey, Reznicek, and MacKenzie), the Board of Directors approved the agenda as presented.***

5. PUBLIC COMMENT TIME

No public comments were presented on items not appearing on the agenda.

6. CONSENT CALENDAR

Director Miller asked about purchasing gasoline powered versus diesel trucks. Operations and Field Services Manager Frank Wolinski explained that the District was not realizing the benefits of a diesel powered truck (e.g. longevity, fuel efficiency, etc.) because of how the vehicle is used; furthermore, purchasing a gasoline powered truck allows the District to avoid additional upfront costs and California Air Resources Board requirements associated with a diesel powered vehicle.

16-06-59	***Upon motion by Director Miller, seconded by Director Reznicek and unanimously carried (5 ayes: Miller, Vásquez, Dorey, Reznicek, and MacKenzie), the Board of Directors approved the Consent Calendar, including Resolution No. 16-15 approving disbursements.***

A. District vehicle purchase

See staff report attached hereto. Staff recommended and the Board authorized the purchase of two medium duty trucks from North County Ford.

B. Minutes of the Fiscal Policy Committee meeting on May 17, 2016

The Board noted and filed the Minutes of the Fiscal Policy Committee meeting on May 17, 2016 which were provided for informational purposes.

C. Minutes of Board of Directors meeting on June 1, 2016

The minutes of June 1, 2016 were approved as presented.

D. Resolution ratifying check disbursements

RESOLUTION NO. 16-15

BE IT RESOLVED, that the Board of Directors of Vista Irrigation District does hereby approve checks numbered 53304 through 53473 drawn on Union Bank totaling $809,051.17.

FURTHER RESOLVED that the Board of Directors does hereby authorize the execution of the checks by the appropriate officers of the District.

PASSED AND ADOPTED unanimously by a roll call vote of the Board of Directors of Vista Irrigation District this 22nd day of June 2016.

* * * * * * * * * * * * * * * * *

7. SAFETY AWARDS PROGRAM

See staff report attached hereto.

Mr. Boone stated that two District employees had received ACWA Joint Powers Insurance Authority (JPIA) H.R. LaBounty Safety Awards. Mr. Boone said that the employees were present and prepared to present their award winning submissions. Mr. Boone introduced Safety & Risk Manager Sherry Thorpe who provided an overview of the H.R. LaBounty Safety Program and introduced each of the award recipients. Ben Parks and Steve Wuerth each presented their award winning ideas.

Director Dorey, the District's representative to ACWA JPIA, presented the awards to Messrs Parks and Wuerth. The Board commended the award recipients for their efforts.

The award recipients and Ms. Thorpe left the meeting at this time.

8. 2015 URBAN WATER MANAGEMENT PLAN

See staff report attached hereto.

Mr. Boone informed the Board that the Urban Water Management Planning Act requires public agencies to prepare an Urban Water Management Plan every 5 years and introduced Assistant General Manager Brett Hodgkiss to present the District's 2015 Urban Water Management Plan (Plan).

Mr. Hodgkiss provided a brief overview of the Plan and stated that the contents of the Plan revolve around supply and demand projections over a 20-year planning horizon. He also mentioned that the Plan describes the reliability of water supplies during average, single-dry and multiple-dry water year conditions and incorporates interim 2015 and 2020 water use targets as required by SBX7-7. Mr. Hodgkiss stated that the District is in compliance with SBX7-7 requirements, meeting its reduction requirements for 2015 as well as 2020.

Mr. Hodgkiss stated that the draft Plan was made available for public review at the District's office and on its web site on June 1. He said that a public hearing notice was duly posted and published in the newspaper on June 14 and June 19 and that no comments had been received from the public. Mr. Hodgkiss noted that comments had been received from Director Dorey regarding how groundwater was addressed in the Plan and that staff had proposed amendments (as noted in an attachment to the staff report) to address Director Dorey's comments. President Vásquez commented on Section 4.5 related to water use for lower income households and requested clarifications regarding how water quality issues and climate change were being addressed in the Plan. Mr. Hodgkiss provided clarifications as needed.

There being no further comments by Directors, President Vásquez opened a public hearing on the 2015 Urban Water Management Plan. No comments were received in writing or verbally from the public regarding the draft 2015 Urban Water Management Plan. President Vásquez closed the public hearing to receive public comment relative to the VID 2015 Urban Water Management Plan and compliance with SBX7-7 at 9:44 a.m.

16-06-60 ***Upon motion by Director Dorey, seconded by Director Miller, the Board of Directors adopted Resolution 16-16 adopting the 2015 Urban Water Management Plan, by the following roll-call vote:***

AYES:	***Directors Miller, Dorey, Reznicek, MacKenzie, and Vásquez***
NOES:	***None***
ABSTAIN:	***None***
ABSENT:	***None***

A copy of Resolution 16-16 is on file in the official Resolution Book of the District.

9. FISCAL YEAR 2017 BUDGET

See staff report attached hereto.

Mr. Boone informed the Board that the Fiscal Policy Committee discussed the budget during their May 17 meeting. He provided the Board with details on key items in the budget, noting that revenue is up slightly due to the automatic pass-through of rate increases from the Water Authority. Mr. Boone stated that approximately $1.9 million will be used from reserves to fund capital budget projects, such as the HP Reservoir Rehabilitation project and the Main Replacement Program. He noted that the rehabilitated reservoir will have nearly the same life span as a new one. Mr. Boone explained that the capital budget for the Main Replacement Program has been increased in an effort to accelerate the replacement of pipe in areas with the highest frequency of leaks.

Director MacKenzie mentioned that the cost of the new telephone system is located in different sections of the budget and asked for clarification. Mr. Boone explained that the total estimated cost of the new telephone system is $70,000; $15,000 for consulting, $35,000 for system hardware and $20,000 for the handsets.

16-06-61	***Upon motion by Director Miller, seconded by Director Reznicek and unanimously carried (5 ayes: Miller, Vásquez, Dorey, Reznicek, and MacKenzie), the Board of Directors adopted the Fiscal Year 2017 Budget.***

10. SELECTION OF FIRM FOR AUDITING SERVICES

See staff report attached hereto.

Finance Manager Marlene Kelleher reported the Request for Proposal (RFP) was sent to twelve accounting firms and five submitted proposals. She stated that White Nelson Dieh Evans LLP was ranked the highest out of the top three firms, noting that they were the only firm that included the preparation of management letter as part of their proposal; this document has been included as part of the audit process at the request of the Board. Ms. Kelleher also noted the firm's extensive experience working with the requirements of GASB 68, which would be very helpful to the District.

Director MacKenzie inquired if the firm offers ongoing assistance throughout the year. Ms. Kelleher replied that they offer training at no cost, if needed. She also stated that the firm's proposal includes 20 hours of consulting in addition to the audit work.

16-06-62	***Upon motion by Director MacKenzie, seconded by Director Reznicek and unanimously carried (5 ayes: Miller, Vásquez, Dorey, Reznicek, and MacKenzie), the Board of Directors authorized the General Manager to enter into a contract with White Nelson Diehl Evans LLP for three years of auditing services, with the option to extend on a year-by-year basis for two additional years.***

11. RELOCATION OF A PORTION OF THE VISTA FLUME

See staff report attached hereto.

Mr. Boone provided an update on the Shea Homes (Shea) Hidden Valley Estates development that impacts the District's flume. Both parties found that it would be beneficial to relocate that portion of the flume into underground pipe through the development.

Engineering Project Manager Randy Whitmann updated the Board that the easement document has been recorded and filed with the County. He informed the Board that the project is exempt from the provisions of the California Environmental Quality Act (CEQA) because the pipe is less than a mile long and will be located in a public right-of-way. Mr. Whitmann stated that Shea has hired Cass Construction for their underground utilities. He said that Cass has experience installing HDPE pipe and the capacity to perform the Flume relocation work.

Mr. Whitmann stated the District will get a cost estimate from Cass to perform that work (based on the approved plans) and compare it to the engineer's estimate. He stated that there should be cost savings related to mobilization and coordination because Cass is already on site. However, if the estimate from Cass is higher than the engineer's estimate, the District will solicit bids for the project.

Director Miller asked for confirmation that staff will talk to Cass, get their estimate and compare it to the engineer's estimate; if Cass's estimate is lower than the engineer's estimate, the District would contract with them. Mr. Whitmann confirmed Mr. Miller's comment. He also stated that the project is estimated to cost between $1.4 and $2.0 million. Staff will provide to the Board a final cost estimate once it is complete.

Director MacKenzie stated that in reading the Flume Relocation Reimbursement Agreement, Shea is also being permitted to provide in kind services not just dollars. Mr. Whitmann confirmed that there is a provision that allows Shea to pay for materials in lieu of contributing dollars; the purchase of materials will count as part Shea's financial contribution to the project.

16-06-63	***Upon motion by Director Miller, seconded by Director MacKenzie and unanimously carried (5 ayes: Miller, Vásquez, Dorey, Reznicek, and MacKenzie), the Board of Directors took the following actions: Approved the Vista Flume Relocation Project and the Flume Relocation Reimbursement Agreement with Shea Homes Limited Partnership; determined that the Vista Flume Relocation Project is exempt from the provisions of the California Environmental Quality Act and directed staff to file the Notice of Exemption with the County Clerk; and authorized staff to negotiate a construction contract amount from a qualified licensed contractor (LN-2015-003, APN 224-100-57, 58, 82 & 83).***

Special Counsel John Carter arrived during the above discussion.

A brief break was taken from 10:17 a.m. to 10:28 a.m.

At this time the Board requested to address Items #20 & #21.

20. CLOSED SESSION FOR CONFERENCE WITH LEGAL COUNSEL

President Vásquez adjourned the meeting to closed session at 10:30 a.m. for a conference with legal counsel per Paragraph (1) of subdivision (d) of Government Code section 54956.9 to discuss the following pending litigation:

A. San Luis Rey Indian Water Rights Litigation (Settlement)

The meeting reconvened in open session at 11:30 a.m. President Vásquez declared that no reportable action had been taken.

At this time Ms. Kelleher, Mr. Wolinski, and Mr. Fisher were present in the audience.

21. LEGAL SERVICES AGREEMENT WITH WILMERHALE

See staff report attached hereto.

Mr. Boone advised the Board that the District entered into an agreement with Wilmerhale on June 5, 2012. He stated that the agreement before the Board for ratification and approval supplements the engagement letter and covers the period January 1, 2016 to June 30, 2017. Mr. Boone also let the Board know that the District had entered into two other supplement agreements covering December 1, 2013 to July 31, 2014 and January 1, 2015 to December 31, 2015

The Board discussed the District's pro-rata share of the fees under the new (fourth) agreement what would happen if Wilmerhale didn't earn their success fees by June 30, 2017. Mr. Boone clarified the pro-rata share under the new agreement (42% - San Luis Rey Indian Water Authority, 29% - City of Escondido and 29% - Vista Irrigation District) and explained that at the conclusion of this engagement, with all success fees earned, all parties will have effectively paid the historical split of 50% - 25% - 25%. He also stated that if Wilmerhale doesn't earn their other success fees by June 30, 2017, the District will have an outstanding amount due for prior legal services; an additional agreement would be needed in order for the District to pay its pro-rata share of the balance due.

16-06-64	***Upon motion by Director Miller, seconded by Director MacKenzie and unanimously carried (5 ayes: Miller, Vásquez, Dorey, Reznicek, and MacKenzie), the Board of Directors ratified and approved the Attorney and Professional Services Agreement with Wilmer Cutler Pickering Hale and Dorr LLP for the period of January 1, 2016 to June 30, 2017.***

John Carter left the meeting after this item and the Board continued with Agenda Item #12.

12. WATER SUPPLY RESPONSE PROGRAM LEVEL CHANGE

See staff report attached hereto.

Mr. Boone provided an overview of the changes in the State's emergency regulations, noting the move away from mandated conservation standards to a supply based approach. He advised the Board that the Water Authority and its member agencies were taking a regional approach to self-certify water supply sufficiency. Mr. Boone explained that the calculations show that the region's combined water supplies would be sufficient to meet demands even after three additional years of drought; based on this calculation, the region's conservation standard would be zero.

Mr. Boone stated that the District is currently at Level 2 of its Water Supply Response Program; a Level 2 condition may declared under certain supply conditions that require a demand reduction. Currently, no conditions exist that require the District to remain at Level 2 which limits landscape watering to two assigned days per week and 10 minutes per station per assigned day. He stated that a return to Level 1 would remove the restriction regarding assigned water days and irrigation run times; however, customers would still not be allowed to water during parts of the day.

Mr. Boone stated this agenda item is for the Board to consider adopting Resolution No. 16-17 declaring an end to Level 2 of the Water Supply Response Program, automatically returning the District to Level 1. He said that a notice will be mailed to customers letting them know that the assigned watering day and irrigation system run time restrictions have been lifted but other prohibitions (e.g. no watering during specified hours, no washing down paved surfaces, etc.) remain in place. The notice will also ask customers to continue to use water wisely. Mr. Boone informed the Board that notification of the end of Level 2 will also be provided in a news release and on the web site. Additionally, staff plans to use fliers in the lobby, telephone on-hold message and other outreach methods to inform customers of the change in level and applicable water-use efficiency practices.

Director Miller announced that the Water Authority is establishing a new long-term drought awareness initiative. Director MacKenzie requested that the notice being mailed to customers be clear about what they can and cannot do. Mr. Hodgkiss indicated that the notice will be similar to the one that the District mailed when it went into Level 2; the notice listed all the prohibitions that were in place under that level. He also said that the notice will thank the customers for their conservation efforts.

Mr. Boone mentioned that the State Board will be developing long-term water conservation regulations this fall. General Counsel Joel Kuperberg clarified that the State has imposed water use restrictions that will remain in place no matter how much water is available.

Mr. Hodgkiss stated that staff has not received any negative comments from customers related to lifting water use restrictions; customers understand the process the District has to go through to declare an end to Level 2.

16-06-65 ***Upon motion by Director Miller, seconded by Director Reznicek, the Board of Directors adopted Resolution 16-17 declaring an end to Level 2 of the Water Supply Response Program by the following roll-call vote:***

AYES:	***Directors Miller, Dorey, Reznicek, MacKenzie, and Vásquez***
NOES:	***None***
ABSTAIN:	***None***
ABSENT:	***None***

A copy of Resolution 16-17 is on file in the official Resolution Book of the District.

Director Reznicek left the meeting after this item.

13. QUARTERLY BOARD EXPENSE REPORT

See staff report attached hereto.

Mr. Boone reported that at the May 11th Board meeting, the General Manager mentioned that staff had suggested eliminating the manually compiled Quarterly Board Expense Report and replacing it with computer generated reports that provide similar information.

Ms. Kelleher reported to the Board that the AB 1542 report referenced in the staff report is produced out of the District's financial system and that preparation of information for the report takes staff approximately ten minutes a month, or about 2 hours per year. She noted the Cash Disbursement Report, produced through the District's financial system, is similar to check register showing amounts, dates, payees, etc. and mirrors the information that is contained in the AB 1542. The third report is the Quarterly Board Expense Report which details items that are paid to or on behalf of Board members such as per diems, health and pension benefits as well as travel and training expenses. This report is not generated out of the District's financial system; the report is compiled manually from multiple sources, including payroll and human resources records, and credit card information. It is estimated that it takes staff approximately 60 hours every quarter or about 240 hours per year to produce this report.

Mr. Boone stated that the Board will be given a copy of the AB 1542 Report once a year.

16-06-66 ***Upon motion by Director MacKenzie, seconded by Director Dorey and unanimously carried (4 ayes: Miller, Vásquez, Dorey, and MacKenzie; 1 absent: Reznicek), the Board of Directors elected to eliminate the Quarterly Board Expense Report.***

14. MATTERS PERTAINING TO THE ACTIVITIES OF THE SAN DIEGO COUNTY WATER AUTHORITY

See staff report attached hereto.

Director Miller reported that no San Diego County Water Authority (Water Authority) Board meeting was held since the District's last Board meeting.

Director Miller mentioned that ACWA requested a letter be sent from the District regarding SB 1298 (Hertzberg) and asked staff if the letter had been submitted. Mr. Boone advised the Board that a letter had been submitted by the District.

Director Miller mentioned that the Water Authority refunded bonds issued in 2008 and 2010 to yield a $63.2 million in savings on a present-value basis over the life of the refinanced bonds. He also announced that the new Chair of the Water Authority Board of Directors is Mark Muir from the San Dieguito Water District.

Director Miller let the Board know that Frank Belock, Deputy General Manager at the Water Authority, is retiring at the end of the month and that a successor has not been named.

Director Miller mentioned that there is talk of eliminating the Small Contractors Outreach and Opportunities Program (SCOOP) Committee which he serves on due to lack of progress with their capital improvement plan.

15. REPORTS ON MEETINGS AND EVENTS ATTENDED BY DIRECTORS, AND AUTHORIZATION FOR DIRECTOR ATTENDANCE AT UPCOMING MEETINGS AND EVENTS

See staff report attached hereto.

Director MacKenzie attended the CSDA Legislative Committee meeting; the Committee discussed various bills. She voiced her concerns about AB 2835 (Cooper), which would require public employers to provide time for recognized employee organizations to make a presentation to newly hired employees during orientation. Mr. Kuperberg stated that if the bill becomes law, staff will look into it to determine whether it requires changes to the Memorandum of Understanding (MOU) and/or District procedures.

Director Dorey reported that he attended the Vista Historical Society annual meeting and Hall of Fame Induction. He stated that past VID Board members, Thomas J. Adams and Paul Campo (along with his wife, Dorothy) were inducted into the Hall of Fame. Director Dorey also attended the Council of Water Utilities (COWU) stating the presentation was regarding Padre Dam revamping their employee system to improve morale. He informed the Board that San Luis Rey Watershed Council will be using a room at the District's offices to conduct interview for a Watershed Council Coordinator.

President Vásquez reported that he attended the COWU meeting. He noted that the District already has in place everything discussed in Padre Dam's presentation.

Director MacKenzie asked for approval to participate in the Legislative Round-Up Webinar on August 11, and approval to attend the Colorado River Water Users Association Annual Conference (CRWUA) December 14-16 in Las Vegas.

President Vásquez, and Directors Dorey and MacKenzie requested to attend COWU on July 19 in Poway.

16-06-67	***Upon motion by Director Miller, seconded by Director MacKenzie and unanimously carried (4 ayes: Miller, Vásquez, Dorey, and MacKenzie; 1 absent: Reznicek)), the Board of Directors authorized the following attendances: President Vásquez, Director Dorey, and Director MacKenzie to attend COWU on July 19 in Poway; Director MacKenzie to participate in the Legislative Round-Up Webinar on August 11, and the CRWUA Conference, December 14-16 in Las Vegas.***

16. ITEMS FOR FUTURE AGENDAS AND/OR PRESS RELEASES

See staff report attached hereto.

The Board requested an agenda item to consider changing the Board of Directors meeting date in December due to a conflict with the (CRWUA) annual conference.

The Board requested an agenda item to consider an agreement with HDR, Inc. for the preparation of the District's Master Plan.

17. COMMENTS BY DIRECTORS

Director Dorey commented on a warning notification he received from California ISO regarding a Flex Alert for Southern California on June 20 due to high temperatures in the region. He found their site was very difficult to obtain information from and credited the District for providing its customers a user friendly website.

President Vásquez commented on the intake study that is underway for a desalination facility at Camp Pendleton. He also stated that he read an article in the newspaper that water use reductions brought energy savings.

18. COMMENTS BY GENERAL COUNSEL

Mr. Kuperberg provided an update to the Board on an eminent domain lawsuit that San Diego Association of Governments (SANDAG) filed some time ago against the District in order obtain trail and parkway easements for a regional bike path that would cross over some of the District's easements. He reported that SANDAG has redesigned the project and that the regional bike path will no longer be located on District easements.

19. COMMENTS BY GENERAL MANAGER

Mr. Boone updated the Board on the Flint, Michigan lead and copper monitoring issue. He stated that the California State Water Resources Control Board (State Board) is requiring additional lead and copper sampling when water agencies obtain/receive a new source of water, such as desalinated seawater. Mr. Boone explained that because the District is receiving a small amount of desalinated seawater water into its system additional sampling would be required. He also stated that Mr. Wolinski requested that the State Board grant a waiver from conducting the required sampling because of the small volume of desalinated seawater the District is receiving; the State Board reduced the number of samples that needed to be taken from fifty to eight. The District has completed its sampling and there were no reportable lead or copper levels.

Mr. Boone provided an update on the District's web site and let the Board know that it is anticipated that the site would go live with the new website at www.vidwater.org on June 28. The domain name (@vidwater.org) on staff e-mail addresses is still in the testing period and is anticipated to

be rolled out in July. The current website address (www.vid-h2o.org) will automatically reroute to the new website address.

Mr. Boone informed the Board that the Council of Water Utilities voted him in as Treasurer. He also reported that Lake Henshaw is currently nine percent full at 4,600 acre feet and the target is to get the lake down to 2,500 acre feet by October.

Mr. Boone informed the Board that he would be out of the office the week of June 27 and for six days following the July 20 Board meeting.

22. ADJOURNMENT

There being no further business to come before the Board, at 12:34 p.m., President Vásquez adjourned the meeting.

Richard L. Vásquez

Richard L. Vásquez, President

ATTEST:

Marian Schmidt

Marian Schmidt, Assistant Secretary
Board of Directors
VISTA IRRIGATION DISTRICT

APPENDIX C

Department of Water Resources
2015 Urban Water Management Plan Checklist

Urban Water Management Plan Standardized Tables

SBX7-7 Verification Forms

AWWA Audit Worksheet

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URBAN WATER MANAGEMENT PLAN CHECKLIST

(Arranged by Water Code Section)

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	Subsection 5.1.3 (pg. 22); Appendix B
10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Chapter 5 and App E	Chapter 5 and Tables 5-1 through 5-4 (pgs. 19-22)
10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	Subsection 5.1.2 and Table 5-3 (pg. 20)
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	Section 5.2 and Table 5-5 (pg.22)
10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	NA
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	Section 10.3 (pg. 67); Appendix B
10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	NA
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	Section 5.2 and Table 5-5 (pg.22); Appendix C
10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.1	Section 10.3 (pg.67); Appendix B
10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.5.2	Subsection 2.4.2 and Table 2-1 (pg.6)
10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.4	Section 1.4 (pgs. 3-4); Chapter 7 (pgs. 49-53)

URBAN WATER MANAGEMENT PLAN CHECKLIST

(Arranged by Water Code Section)

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	Subsection 10.2.1 and Table 10.1 (pg. 67); Appendix B
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	Sections 10.3 and 10.4 (pgs. 67-68)
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	Sections 3.2 and 3.3 (pgs. 7-8); Figure 3-1 through Figure 3-3 (pgs. 9-11)
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	Section 3-5 (pg.12); Table 3-2 (pgs. 12-13)
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	Section 3.4 and Table 3-1 (pg. 12); Section 5.2 and Table 5-5 (pg. 22)
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	Section 3.4 and Table 3-1 (pg. 12)
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	Section 3.6 (pg. 13); Table 3-3 (pg. 14)
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	Sections 6-1 through 6-9 (pgs. 25-40); Tables 6-1 through 6-9 (pgs. 28-31, 34-35, 38 and 40)
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	Section 6.2 (pgs. 32-34; Tables 6-5 and 6-6 (pg.34)
10631(b)(1)	Indicate whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2	Subsection 6.2.2 (pg. 33)
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	Subsection 6.2.1 (pgs. 32-33)
10631(b)(2)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2	Subsection 6.2.3 (pg. 33)

URBAN WATER MANAGEMENT PLAN CHECKLIST

(Arranged by Water Code Section)

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.	System Supplies	Section 6.2.3	Subsection 6.2.3 (pg. 33)
10631(b)(3)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.2.4	Subsections 6.2.4 (pg. 33); Table 6-5 (page 34)
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	Subsections 6.2.4 (pg. 33); Table 6-6 (page 34)
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	Sections 6-1 through 6-9 (pgs. 25-40); Chapter 7 (pgs. 49-53)
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	Chapter 7 (pgs. 49-53); Tables 7-1 through 7-7 (pgs 50-53)
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	Sections 6-1 through 6-9 (pgs. 25-40); Chapter 7 (pgs. 49-53)
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	Section 6.7 (pg. 39)
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	Section 4.2 (pgs. 15-16); Table 4-1 (pg. 15)
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	Section 4.3 (pg. 16); Appendix C
10631(f)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3	Chapter 9 (pgs. 63-65); Appendix D
10631(f)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Sections 9.1 and 9.3	Appendix D
10631(g)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years.	System Supplies	Section 6.8	Section 6.8 (pg. 40)

URBAN WATER MANAGEMENT PLAN CHECKLIST

(Arranged by Water Code Section)

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10631(h)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	Subsections 6.1.4 and 6.1.5 (pgs. 30-32); Table 6-4 (pg. 31); Section 6-6 (pg. 39)
10631(i)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	Appendix D
10631(j)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source.	System Supplies	Section 2.5.1	Sections 6-2 through 6-9 (pgs. 32-40); Tables 6-5 through 6-9 (pgs. 34-35, 38 and 40) Chpater 7 (pgs. 49-53); Tables 7-1 through 7-7 (pgs. 50-53)
10631(j)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	Sections 6-1 (pgs. 25-32); Tables 6-1 through 6-4 (pgs. 28-31); Chpater 7 (pgs. 49-53); Tables 7-1 through 7-7 (pgs. 50-53)
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	Section 4.5 (pgs. 17-18)
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	Section 8-1 (pgs. 55-57); Tables 8-1 and 8-2 (pgs. 55 and 57)
10632(a)(2)	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.	Water Shortage Contingency Planning	Section 8.9	Section 8-9 (pg.62); Table 8-7 (pg. 62)
10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	Section 8-8 (pgs. 60-61); Table 8-6 (pg. 61)
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	Section 8.2 (pg. 58); Table 8-3 (pg. 58)
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	Section 8.4 (pg. 59); Table 8-4 (pg. 59)

URBAN WATER MANAGEMENT PLAN CHECKLIST

(Arranged by Water Code Section)

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	Section 8.3 (pg. 58)
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	Section 8.6 (pgs.59-60)
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	Section 8.7 (pg. 60); Appendix E
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	Section 8.5 (pg. 59); Table 8-5 (pg. 59)
10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	Subsection 6.5.1 (pgs. 35-36)
10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	Subsection 6.5.2 (pgs. 36-38); Tables 6-7 and 6-8 (pg. 38)
10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.5.2.2	Subsection 6.5.2 (pgs. 36-38); Tables 6-7 and 6-8 (pg. 38)
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	Subsection 6.5.3 (pg. 38)
10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	Subsection 6.5.4 (pg. 38)
10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.5.4	Subsection 6.5.4 (pg. 38)
10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.5.5	Subsection 6.5.5 (pgs. 38-39)
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	Subsection 6.5.5 (pgs. 38-39)

URBAN WATER MANAGEMENT PLAN CHECKLIST

(Arranged by Water Code Section)

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1	Section 6.10 (pgs. 41-47)
10635(a)	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3	Chapter 7 (pgs. 49-53); Tables 7-1 through 7-7 (pgs. 50-53)
10635(b)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 60 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	Section 10.4 (pg. 68)
10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	Plan Preparation	Section 2.5.2	Subsection 2.4.2 (pg. 6)
10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	Sections 10.2 and 10.3 (pg. 67); Table 10-1 (pg. 67); Appendix B
10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2.1	Subsection 10.2.1 (pg. 67); Appendix B
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	Section 10.3 (pg. 67)
10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	Section 10.4 (pg. 68)
10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	Section 10.4 (pg. 68)
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	Section 10.4 (pg. 68)
10645	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5	Section 10.5 (pg. 68)

Urban Water Management Plan Standardized Tables

Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
3710027	Vista Irrigation District	28,649	17,883
	TOTAL	28,649	17,883
NOTES: None			

Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance** *if applicable* *drop down list*
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☐	Water Supplier is also a member of a Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES: None			

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☐	UWMP Tables Are in Calendar Years
☑	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
7/1	
Units of Measure Used in UWMP (select from Drop down)	
Unit	AF
NOTES: None	

Urban Water Management Plan Standardized Tables

Table 2-4 Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name *(Add additional rows as needed)*
Metropolitan Water District of Southern California
San Diego County Water Authority
NOTES: None

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	127,699	129,618	137,042	147,504	150,202	158,627
NOTES: Data Source - SANDAG Series 13 Growth Forecast						

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type *(Add additional rows as needed)*	2015 Actual		
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*	Additional Description *(as needed)*	Level of Treatment When Delivered *Drop down list*	Volume
Single Family		Drinking Water	8,701
Multi-Family		Drinking Water	2,822
Other	Mobile Home	Drinking Water	378
Commercial		Drinking Water	1,237
Industrial		Drinking Water	629
Institutional/Governmental		Drinking Water	441
Landscape		Drinking Water	1,955
Agricultural irrigation		Drinking Water	954
Losses		Drinking Water	606
Other	Water consumed but not yet billed to customers	Drinking Water	110
		TOTAL	17,833
NOTES: None			

Urban Water Management Plan Standardized Tables

Table 4-2 Retail: Demands for Potable and Raw Water - Projected

Use Type *(Add additional rows as needed)* ***Drop down list*** *May select each use multiple times* *These are the only Use Types that will be recognized by the WUEdata online submittal tool*	Additional Description *(as needed)*	Projected Water Use *Report To the Extent that Records are Available*				
		2020	2025	2030	2035	2040-opt
Single Family		9,910	10,785	11,514	11,892	12,315
Multi-Family		3,159	3,411	3,621	3,742	3,949
Other	Mobile Home	378	378	378	378	378
Commercial		1,351	1,475	1,579	1,632	1,690
Industrial		748	835	900	933	966
Institutional/Governmental		560	622	674	700	724
Landscape		2,108	2,310	2,478	2,565	2,656
Agricultural irrigation		934	878	824	796	768
Losses		596	626	661	679	701
	TOTAL	19,744	21,320	22,629	23,317	24,147

NOTES: None

Table 4-3 Retail: Total Water Demands

	2015	2020	2025	2030	2035	2040 *(opt)*
Potable and Raw Water *From Tables 4-1 and 4-2*	17,833	19,744	21,320	22,629	23,317	24,147
Recycled Water Demand* *From Table 6-4*	0	0	0	0	0	0
TOTAL WATER DEMAND	17,833	19,744	21,320	22,629	23,317	24,147

**Recycled water demand fields will be blank until Table 6-4 is complete.*

NOTES: It is anticipated that no recycled water will be delivered in VID's service are during the period covered by the 2015 Plan.

Table 4-4 Retail: 12 Month Water Loss Audit Reporting

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
07/2014	606

** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*

NOTES: None

Urban Water Management Plan Standardized Tables

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc... utilized in demand projections are found.	Section 4.4
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes
NOTES: Section 4.5 contains information about water use for lower income households.	

Table 5-1 Baselines and Targets Summary *Retail Agency or Regional Alliance Only*					
Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	1996	2005	175	158	142
5 Year	2004	2008	175		
*All values are in Gallons per Capita per Day (GPCD)					
NOTES: None					

Table 5-2: 2015 Compliance *Retail Agency or Regional Alliance Only*								
Actual 2015 GPCD*	2015 Interim Target GPCD*	Optional Adjustments to 2015 GPCD *From Methodology 8*					2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*		
125	158	0	0	0	0	125	125	Yes
All values are in Gallons per Capita per Day (GPCD)								
NOTES: None								

Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type ***Drop Down List*** *May use each category multiple times*	Location or Basin Name	2011	2012	2013	2014	2015
Add additional rows as needed						
Alluvial Basin	Warner Valley	4,955	3,782	9,985	8,268	7,923
	TOTAL	4,955	3,782	9,985	8,268	7,923
NOTES: Warner Valley groundwater basin referred to as Warner Basin in VID's 2015 UWMP						

Urban Water Management Plan Standardized Tables

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015

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

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
City of Vista	Metered	6,030	Encina Wastewater Authority	Encina Water Pollution Control Facility	No	Yes
Buena Sanitation District	Metered	1,651	Encina Wastewater Authority	Encina Water Pollution Control Facility	No	Yes
Total Wastewater Collected from Service Area in 2015:		7,681				

NOTES: None

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015

☑	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal *Drop down list*	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level *Drop down list*	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Add additional rows as needed										
						Total	0	0	0	0

NOTES: None

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area

☑	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.

Name of Agency Producing (Treating) the Recycled Water:	
Name of Agency Operating the Recycled Water Distribution System:	
Supplemental Water Added in 2015	
Source of 2015 Supplemental Water	

Beneficial Use Type	General Description of 2015 Uses	Level of Treatment *Drop down list*	2015	2020	2025	2030	2035	2040 (opt)
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								
Other *(Provide General Description)*								
		Total:	0	0	0	0	0	0

**IPR - Indirect Potable Reuse*

NOTES: None

Urban Water Management Plan Standardized Tables

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual			
☑	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.		
Use Type		**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation			
Landscape irrigation (excludes golf courses)			
Golf course irrigation			
Commercial use			
Industrial use			
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)			
Surface water augmentation (IPR)			
Direct potable reuse			
Other	*Type of Use*		
Total		0	0
NOTES: None			

Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
☑	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Add additional rows as needed			
		Total	0
NOTES: None			

Urban Water Management Plan Standardized Tables

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type *Drop Down List*	Expected Increase in Water Supply to Agency *This may be a range*
	Drop Down List (y/n)	*If Yes, Agency Name*				
Add additional rows as needed						
NOTES: None						

Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		Actual Volume	Water Quality *Drop Down List*	Total Right or Safe Yield *(optional)*
Purchased or Imported Water	Multiple Sources	16,215	Drinking Water	
Surface water	Lake Hensahw	1,618	Drinking Water	
	Total	17,833		0
NOTES: None				

Table 6-9 Retail: Water Supplies — Projected												
Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*										
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		**2020**		**2025**		**2030**		**2035**		**2040** *(opt)*		
		Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*
Add additional rows as needed												
Purchased or Imported Water	Multiple sources	14,682		16,258		17,567		18,255		19,085		
Surface water	Lake Henshaw	5,062		5,062		5,062		5,062		5,062		
	Total	19,744	0	21,320	0	22,629	0	23,317	0	24,147	0	
NOTES: None												

Urban Water Management Plan Standardized Tables

Table 7-1 Retail: Basis of Water Year Data

Year Type	Base Year *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	Available Supplies if Year Type Repeats	
		☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____	
		☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
Average Year		5062	100%
Single-Dry Year	2015	1618	
Multiple-Dry Years 1st Year	2013	2092	
Multiple-Dry Years 2nd Year	2014	1695	
Multiple-Dry Years 3rd Year	2015	1618	
Multiple-Dry Years 4th Year *Optional*			
Multiple-Dry Years 5th Year *Optional*			
Multiple-Dry Years 6th Year *Optional*			

Agency may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If an agency uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

NOTES: Average represents median water production from 1960 to 2015. The numbers presented in this table are for VID's local surface water supply, Lake Henshaw.

Urban Water Management Plan Standardized Tables

Table 7-1 Retail: Basis of Water Year Data

Year Type	Base Year *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	Available Supplies if Year Type Repeats	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: See notes below for more detailed information.
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	**% of Average Supply**
Average Year		14120	100%
Single-Dry Year	2015	16215	
Multiple-Dry Years 1st Year	2013	17398	
Multiple-Dry Years 2nd Year	2014	18439	
Multiple-Dry Years 3rd Year	2015	16215	
Multiple-Dry Years 4th Year *Optional*			
Multiple-Dry Years 5th Year *Optional*			
Multiple-Dry Years 6th Year *Optional*			

Agency may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If an agency uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

NOTES: This table covers water purchased from the San Diego County Water Authority; average/normal represents average water production from 1986 to 2015 (date range from Water Authority's 2015 Plan).

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

	2020	2025	2030	2035	2040 *(Opt)*
Supply totals *(autofill from Table 6-9)*	19,744	21,320	22,629	23,317	24,147
Demand totals *(autofill from Table 4-3)*	19,744	21,320	22,629	23,317	24,147
Difference	0	0	0	0	0

NOTES: None

Urban Water Management Plan Standardized Tables

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	21,718	23,452	24,892	25,649	26,562
Demand totals	21,718	23,452	24,892	25,649	26,562
Difference	0	0	0	0	0
NOTES: None					

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	20,036	22,065	23,740	25,043	25,832
	Demand totals	20,036	22,065	23,740	25,043	25,832
	Difference	0	0	0	0	0
Second year	Supply totals	20,456	22,412	24,028	25,194	26,015
	Demand totals	20,456	22,412	24,028	25,194	26,015
	Difference	0	0	0	0	0
Third year	Supply totals	20,876	22,759	24,316	24,378	23,945
	Demand totals	20,876	22,759	24,316	25,345	26,198
	Difference	0	0	0	(967)	(2,253)
Fourth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
Fifth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
Sixth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
NOTES: The years shown in the column headings (e.g. 2020, 2025, etc.) do not correspond to the multiple dry year supply and demand comparison scenarios contained in VID's 2015 UWMP. The numbers being reported in the table are consistent with the data provided in VID's 2015 UWMP and represent the following years: 2020 represents 2016 through 2018; 2025 represents 2021 through 2023; 2030 represents 2026 through 2028; 2035 represents 2031 through 2033; and 2040 represents 2036 through 2038.						

Table 8-1 Retail **Stages of Water Shortage Contingency Plan**		
Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition (*Narrative description)*
1	0	Level 1 applies at all times unless the District Board of Directors has declared another level, per the procedures set forth in the Program.
2	Up to 20%	Level 2 may be declared when 1) the Water Authority notifies its member agencies that due to cutbacks caused by drought or other reduction in supplies, a consumer demand reduction is required in order to have sufficient supplies available to meet anticipated demands; 2) when a consumer demand reduction is required by a regulatory agency; or 3) when other conditions exist that require a consumer demand reduction.
3	Up to 40%	Level 3 may be declared when 1) the Water Authority notifies its member agencies that due to increasing cutbacks caused by drought or other reduction in supplies, a serious water shortage condition exists that requires extensive consumer demand reductions in n order to have sufficient supplies available to meet anticipated demands; 2) when a similar requirement is imposed by a regulatory agency; or 3) when other conditions exist that require a serious consumer demand reduction.
4	More than 40%	Level 4 may be declared when 1) the Water Authority Board of Directors declares a water shortage emergency pursuant to California Water Code section 350 and notifies member agencies that Level 4 requires an emergency demand reduction in order for the District to maximize supplies available to meet anticipated demands; 2) when a similar requirement is imposed by a regulatory agency; or 3) when other conditions exist that require a serious consumer demand reduction. **Water conservation measures implemented in Level 4 will have the ability to achieve a water reduction consistent with a 50% reduction in water supply (Water Code section 10632(e)).**
[1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.*		
NOTES: VID's Water Supply Response Program uses "levels" rather than "stages" to describe responses to conditions; for the purposes of this table, the terms are interchangeable.		

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *Drop Down List*
1, 2, 3 and 4	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
1, 2, 3 and 4	Landscape - Limit landscape irrigation to specific times		Yes
1, 2, 3 and 4	CII - Lodging establishment must offer opt out of linen service		Yes
1, 2, 3 and 4	CII - Restaurants may only serve water upon request		Yes
1, 2, 3 and 4	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner		Yes
1, 2, 3 and 4	Other - Require automatic shut of hoses		Yes
1, 2, 3 and 4	Other - Prohibit use of potable water for washing hard surfaces		Yes
1 and 2	Water Features - Restrict water use for decorative water features, such as fountains	Re-circulated water to operate fountains	Yes
2 and 3	Landscape - Limit landscape irrigation to specific days		Yes
2 and 3	Landscape - Other landscape restriction or prohibition	Restrictions on plant/turf establishment	Yes
3 and 4	Other water feature or swimming pool restriction	Stop operating water features; restriction on filling/re-filling pools	Yes
3 and 4	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes
3 and 4	Other	See Notes below	Yes
4	Landscape - Prohibit all landscape irrigation		Yes
NOTES: The Other for stages 3 and 4 refers to restrictions on filling or re-filling ornamental lakes and ponds, restrictions on the issuance of new water meters and the ability to establish water allocations.			

Table 8-3 Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*
1, 2, 3 and 4	Offer Water Use Surveys	Residential and CII customers eligible
1, 2, 3 and 4	Provide Rebates on Plumbing Fixtures and Devices	Residential and CII customers eligible
1, 2, 3 and 4	Provide Rebates for Landscape Irrigation Efficiency	Residential and CII customers eligible
1, 2, 3 and 4	Other	Water use restrictions (e.g. stop washing down paved surfaces, eliminate irrigation run-off, repair leaks, etc.)
2 and 3	Other	Limit landscape irrigation to assigned days and established watering time limits
2, 3 and 4	Expand Public Information Campaign	
3 and 4	Moratorium or Net Zero Demand Increase on New Connections	
3 and 4	Other	Water allocations may be implemented for individual properties
4	Other	Landscape irrigation prohibited
NOTES: None.		

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	20,036	20,456	20,679
NOTES: None			

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
City of Vista	☑	☑
City of Escondido	☑	☑
City of Oceanside	☑	☑
City of San Marcos	☑	☑
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
San Diego County	☑	☑
NOTES: None		

SBX 7-7 VERIFICATION FORMS

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES: None

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	23,525	Acre Feet
	2008 total volume of delivered recycled water	-	Acre Feet
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	1996	
	Year ending baseline period range[3]	2005	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	
	Year ending baseline period range[4]	2008	
[1]If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. [2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.			
[3]The ending year must be between December 31, 2004 and December 31, 2010.			
[4]The ending year must be between December 31, 2007 and December 31, 2010.			
NOTES: None			

SBX 7-7 VERIFICATION FORMS

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☐	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☑	**4. Other** DWR recommends pre-review
NOTES: SANDAG Series 13 Growth Forecast	

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	1996	105,399
Year 2	1997	107,415
Year 3	1998	109,470
Year 4	1999	111,564
Year 5	2000	113,704
Year 6	2001	117,535
Year 7	2002	118,568
Year 8	2003	119,750
Year 9	2004	120,258
Year 10	2005	120,053
5 Year Baseline Population		
Year 1	2004	120,258
Year 2	2005	120,053
Year 3	2006	120,207
Year 4	2007	120,443
Year 5	2008	121,491
2015 Compliance Year Population		
2015		127,699
NOTES: None		

SBX 7-7 VERIFICATION FORMS

SB X7-7 Table 4: Annual Gross Water Use *								
Baseline Year *Fm SB X7-7 Table 3*		**Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**Deductions**					**Annual Gross Water Use**
			Exported Water	**Change in Dist. System Storage** (+/-)	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use**	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1996	21,629			-		-	21,629
Year 2	1997	21,767			-		-	21,767
Year 3	1998	19,357			-		-	19,357
Year 4	1999	21,477			-		-	21,477
Year 5	2000	23,927			-		-	23,927
Year 6	2001	22,220			-		-	22,220
Year 7	2002	23,783			-		-	23,783
Year 8	2003	22,770			-		-	22,770
Year 9	2004	24,779			-		-	24,779
Year 10	2005	22,398			-		-	22,398
10 - 15 year baseline average gross water use								**22,411**
5 Year Baseline - Gross Water Use								
Year 1	2004	24,779			-		-	24,779
Year 2	2005	22,398			-		-	22,398
Year 3	2006	23,349			-		-	23,349
Year 4	2007	24,030			-		-	24,030
Year 5	2008	23,525			-		-	23,525
5 year baseline average gross water use								**23,616**
2015 Compliance Year - Gross Water Use								
2015		17,833	-		-		-	**17,833**
* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3								
NOTES: None								

SBX 7-7 VERIFICATION FORMS

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)
Complete one table for each source.

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

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment * *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1996	13377		13,377
Year 2	1997	9659		9,659
Year 3	1998	7649		7,649
Year 4	1999	14001		14,001
Year 5	2000	6804		6,804
Year 6	2001	4664		4,664
Year 7	2002	4026		4,026
Year 8	2003	1578		1,578
Year 9	2004	1003		1,003
Year 10	2005	1170		1,170
5 Year Baseline - Water into Distribution System				
Year 1	2004	1003		1,003
Year 2	2005	1170		1,170
Year 3	2006	9856		9,856
Year 4	2007	5062		5,062
Year 5	2008	2245		2,245
2015 Compliance Year - Water into Distribution System				
2015		1,618		1,618

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

NOTES: None

SBX 7-7 VERIFICATION FORMS

SB X7-7 Table 4-A: Volume Entering the Distribution				
Name of Source	Purchased Water - Water Authority			
This water source is:				
☐	The supplier's own water source			
☑	A purchased or imported source			
Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment * *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1996	8252		8,252
Year 2	1997	12108		12,108
Year 3	1998	11708		11,708
Year 4	1999	7476		7,476
Year 5	2000	17123		17,123
Year 6	2001	17556		17,556
Year 7	2002	19757		19,757
Year 8	2003	21192		21,192
Year 9	2004	23776		23,776
Year 10	2005	21228		21,228
5 Year Baseline - Water into Distribution System				
Year 1	2004	23776		23,776
Year 2	2005	21228		21,228
Year 3	2006	13493		13,493
Year 4	2007	18968		18,968
Year 5	2008	21280		21,280
2015 Compliance Year - Water into Distribution System				
2015		16,215		16,215
** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*				
NOTES: None				

NOTE: Table 4-B (Indirect Recycled Water Use Deduction), 4-C (Process Water Deduction Eligibility) and Table 4-D (Process Water Deduction Volume) have not been included because the VID is not deducting recycled water or process water use.

SBX 7-7 VERIFICATION FORMS

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1996	105,399	21,629	183
Year 2	1997	107,415	21,767	181
Year 3	1998	109,470	19,357	158
Year 4	1999	111,564	21,477	172
Year 5	2000	113,704	23,927	188
Year 6	2001	117,535	22,220	169
Year 7	2002	118,568	23,783	179
Year 8	2003	119,750	22,770	170
Year 9	2004	120,258	24,779	184
Year 10	2005	120,053	22,398	167
10-15 Year Average Baseline GPCD				**175**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2004	120,258	24,779	184
Year 2	2005	120,053	22,398	167
Year 3	2006	120,207	23,349	173
Year 4	2007	120,443	24,030	178
Year 5	2008	121,491	23,525	173
5 Year Average Baseline GPCD				**175**
2015 Compliance Year GPCD				
2015		127,699	17,833	**125**
NOTES: None				

SBX 7-7 VERIFICATION FORMS

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	175
5 Year Baseline GPCD	175
2015 Compliance Year GPCD	125
NOTES: None	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☐	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☑	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES: None		

SB X7-7 Table 7-E: Target Method 3				
Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
☐		North Coast	137	130
☐		North Lahontan	173	164
☐		Sacramento River	176	167
☐		San Francisco Bay	131	124
☐		San Joaquin River	174	165
☐		Central Coast	123	117
☐		Tulare Lake	188	179
☐		South Lahontan	170	162
☑		South Coast	149	142
☐		Colorado River	211	200
Target *(If more than one region is selected, this value is calculated.)*				**0**
NOTES: None				

SBX 7-7 VERIFICATION FORMS

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	Calculated 2020 Target[2]	**Confirmed 2020 Target**
175	166	142	**142**

[1]Maximum 2020 Target is 95% of the 5 Year Baseline GPCD
[2]2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.

NOTES: Calculated 2020 Target based on Method 3.

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target *From SB X7-7 Table 7-F*	10-15 year Baseline GPCD *From SB X7-7 Table 5*	**2015 Interim Target GPCD**
142	175	**158**

NOTES: None

SB X7-7 Table 9: 2015 Compliance								
Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)* Enter "0" if Adjustment Not Used: Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD	2015 GPCD *(Adjusted if applicable)*	**Did Supplier Achieve Targeted Reduction for 2015?**
125	158	-	-	-	-	125	125	**YES**

NOTES: None

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: Vista Irrigation District
Reporting Year: 2015 7/2014 - 6/2015

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.

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

Master Meter and Supply Error Adjustments

WATER SUPPLIED

					Pcnt:	Value:	
Volume from own sources:	9	1,618.000	acre-ft/yr	1	-1.10%		acre-ft/yr
Water imported:	10	16,215.000	acre-ft/yr	1	-0.63%		acre-ft/yr
Water exported:	10	0.000	acre-ft/yr				acre-ft/yr

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

WATER SUPPLIED: 17,953.798 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	9	17,117.000	acre-ft/yr			
Billed unmetered:	10	1.130	acre-ft/yr			
Unbilled metered:	10	4.940	acre-ft/yr			
Unbilled unmetered:	10	224.422	acre-ft/yr	1.25%		acre-ft/yr

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

AUTHORIZED CONSUMPTION: 17,347.492 acre-ft/yr

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption) 606.306 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		44.884	acre-ft/yr	0.25%		acre-ft/yr

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

Customer metering inaccuracies:	8	42.912	acre-ft/yr	0.25%		acre-ft/yr
Systematic data handling errors:	7	42.793	acre-ft/yr	0.25%		acre-ft/yr

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

Apparent Losses: 130.589 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 475.717 acre-ft/yr

WATER LOSSES: 606.306 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 835.668 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	10	473.0	miles
Number of active AND inactive service connections:	10	28,625	
Service connection density:		61	conn./mile main

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

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: 9 95.0 psi

COST DATA

Total annual cost of operating water system:	10	$22,208,529	$/Year	
Customer retail unit cost (applied to Apparent Losses):	8	$3.93	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	10	$1,176.00	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 91 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: Unauthorized consumption
2: Systematic data handling errors
3: Customer metering inaccuracies

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

Water Audit Report for: Vista Irrigation District
Reporting Year: 2015 | 7/2014 - 6/2015

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 91 out of 100 ***

System Attributes:

	Apparent Losses:	130.589	acre-ft/yr
+	Real Losses:	475.717	acre-ft/yr
=	**Water Losses:**	**606.306**	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	729.22	acre-ft/yr
	Annual cost of Apparent Losses:	$223,557	
	Annual cost of Real Losses:	$559,443	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	4.7%	
	Non-revenue water as percent by cost of operating system:	4.7%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	4.07	gallons/connection/day
	Real Losses per service connection per day:	14.84	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.16	gallons/connection/day/psi

	From Above, Real Losses = Current Annual Real Losses (CARL):	475.72	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	0.65	

* 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:
User Comments

Use this worksheet to add comments or notes to explain how an input value was calculated, or to document the sources of the information used.

General Comment:	

Audit Item	Comment
Volume from own sources:	2015 Annual report
Vol. from own sources: Master meter error adjustment:	City of Escondido: System Imput Volume and Water Supplied Data Collection and Analysis Technical Memo 8/13/14
Water imported:	2015 Annual report
Water imported: master meter error adjustment:	Stewart Williams from the SDCWA provided meter test results for 2015
Water exported:	NA
Water exported: master meter error adjustment:	NA
Billed metered:	2015 Annual report
Billed unmetered:	Damage claims and water theft
Unbilled metered:	VID accounts
Unbilled unmetered:	Spreadsheet calculated figure

Audit Item	Comment
Unauthorized consumption:	Spreadsheet calculated figure
Customer metering inaccuracies:	AWWA default
Systematic data handling errors:	AWWA default
Length of mains:	2015 CAFR
Number of active AND inactive service connections:	2015 CAFR
Average length of customer service line:	NA
Average operating pressure:	Operations SCADA
Total annual cost of operating water system:	VID Statements of Revenues, Expenses and Changes in Net Position Years Ended June 30 2015 and 2014
Customer retail unit cost (applied to Apparent Losses):	AG Domestic Rate used majority of the fiscal year
Variable production cost (applied to Real Losses):	CWA Variable 1042 Weese (Actual) 134 - 1,176

AWWA Free Water Audit Software: Water Balance

WAS v5.0

Water Audit Report for:	Vista Irrigation District	
Reporting Year:	2015	7/2014 - 6/2015
Data Validity Score:	91	

Water Exported
0.000

Billed Water Exported

Own Sources
(Adjusted for known errors)
1,635.996

Water Supplied
17,953.798

Authorized Consumption
17,347.492

Billed Authorized Consumption
17,118.130

Billed Metered Consumption (water exported is removed)
17,117.000

Billed Unmetered Consumption
1.130

Revenue Water
17,118.130

Unbilled Authorized Consumption
229.362

Unbilled Metered Consumption
4.940

Unbilled Unmetered Consumption
224.422

Non-Revenue Water (NRW)
835.668

Water Losses
606.306

Apparent Losses
130.589

Unauthorized Consumption
44.884

Customer Metering Inaccuracies
42.912

Systematic Data Handling Errors
42.793

Water Imported
16,317.802

Real Losses
475.717

Leakage on Transmission and/or Distribution Mains
Not broken down

Leakage and Overflows at Utility's Storage Tanks
Not broken down

Leakage on Service Connections
Not broken down

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APPENDIX D

California Urban Water Conservation Council
Best Management Practice (BMP) Activity Reports
2013 and 2014

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CUWCC BMP Retail Coverage Report 2013

Foundational Best Managemant Practices for Urban Water Efficiency

BMP 1.1 Operation Practices

ON TRACK

234 Vista Irrigation District

1. Conservation Coordinator provided with necessary resources to implement BMPs?

Name: Brent Reyes

Title: Water Conservation Specialist

Email: breyes@vid-h2o.org

2. Water Waste Prevention Documents

WW Document Name	WWP File Name	WW Prevention URL	WW Prevention Ordinance Terms Description
Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP.			Water Supply Response Program
Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area.			
Option C Describe any documentation of support for legislation or regulations that prohibit water waste.			
Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP.			
Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP.			
Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development.			

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Retail Coverage Report 2013

Foundational Best Managemant Practices for Urban Water Efficiency

BMP 1.1 Operation Practices **ON TRACK**

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.2 Water Loss Control **ON TRACK**

234 Vista Irrigation District

Completed Standard Water Audit Using AWWA Software?	Yes
AWWA File provided to CUWCC?	Yes
AWWA Free Water Audit Software 2013.xls	
AWWA Water Audit Validity Score?	91
Complete Training in AWWA Audit Method	Yes
Complete Training in Component Analysis Process?	Yes
Component Analysis?	Yes
Repaired all leaks and breaks to the extent cost effective?	Yes
Locate and Repar unreported leaks to the extent cost effective?	Yes
Maintain a record keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.	Yes

Provided 7 Types of Water Loss Control Info

Leaks Repairs	Value Real Losses	Value Apparent Losses	Miles Surveyed	Press Reduction	Cost Of Interventions	Water Saved (AF)
236	326395	81503	10	False	1700000	

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.3 Metering With Commodity

ON TRACK

234 Vista Irrigation District

Numbered Unmetered Accounts	No
Metered Accounts billed by volume of use	Yes
Number of CII Accounts with Mixed Use Meters	1166
Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	Yes
Feasibility Study provided to CUWCC?	Yes

Date: 1/10/2012

Uploaded file name:

Completed a written plan, policy or program to test, repair and replace meters	Yes
At Least As effective As	No
Exemption	No

Comments:

Meter reads= SF/134,074 MF/11,147 C/8,393 IN/5,165 INST/911 IR/8,555 OTHER/325

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.4 Retail Conservation Pricing

234 Vista Irrigation District

Implementation (Water Rate Structure)

Customer Class	Water Rate Type	Conserving Rate?	(V) Total Revenue Comodity Charges	(M) Total Revenue Fixed Carges
Single-Family	Increasing Block	Yes	14823080	8456160
Multi-Family	Increasing Block	Yes	5378468	236880
Commercial	Increasing Block	Yes	2091632	738996
Industrial	Increasing Block	Yes	1330207	409996
Institutional	Increasing Block	Yes	1111707	204763
Dedicated Irrigation	Increasing Block	Yes	3174613	764553
Other	Increasing Block	Yes	79831	78660
			27989538	**10890008**

Calculate: V / (V + M) **72 %**

Implementation Option: Use Canadian Water Wastewater Association Rate Design Model

☐ Use 3 years average instead of most recent year

Canadian Water and Wastewater Association

Upload file:

Agency Provide Sewer Service: No

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

234 **Vista Irrigation District** **Retail**

Does your agency perform Public Outreach programs? Yes

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

San Diego County Water Authority

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

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

Public Outreach Program List	Number
General water conservation information	260
Email Messages	260
Newsletter articles on conservation	50000
Website	2772
Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets	25000
Total	**78292**

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

Number Media Contacts	Number
News releases	3
Articles or stories resulting from outreach	3
Total	**6**

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

Public Information Program Annual Budget

Annual Budget Category	Annual Budget Amount
Outreach Staff	34008
Publications	7500
Awards	600
Total Amount:	**42108**

Public Outreah Additional Programs
Speaker's Bureau

Description of all other Public Outreach programs

Comments:

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

VID participates and supports the San Diego County Water Authority's (SDCWA) outreach efforts. For more information on SDCWA outreach programs please see their BMP reports. Awards expenses include landscape & poster contest

At Least As effective As	No

Exemption	No	0

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.2 School Education Programs

ON TRACK

234 Vista Irrigation District **Retail**

Does your agency implement School Education programs? Yes

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

San Diego County Water Authority

Materials meet state education framework requirements? Yes

3rd & 4th grade history DVD. Be Water Smart DVD, Water Supply & Water Cycle posters, Watersheds Water & You for Splash Lab participants, Water is Life PowerPoint.

Materials distributed to K-6? Yes

3rd & 4th grade history DVD. Be Water Smart DVD, Water Supply & Water Cycle posters, Watersheds Water & You for Splash Lab participants, Water is Life PowerPoint

Materials distributed to 7-12 students? Yes (Info Only)

Scholarship contest hardcopy applications sent

Annual budget for school education program: 5620.00

Description of all other water supplier education programs

H2O, Where Do You Go? Assembly, Magic of Water Assembly, Splashtastic Assembly

Comments:

Distribution numbers for school materials includes materials distributed by both the SDCWA and VID in VID's service territory.Education budget includes calendars and Splash Lab visits.

At Least As effective As No

Exemption No 0

CUWCC BMP Retail Coverage Report 2014

Foundational Best Managemant Practices for Urban Water Efficiency

BMP 1.1 Operation Practices

ON TRACK

234 Vista Irrigation District

1. Conservation Coordinator provided with necessary resources to implement BMPs?

Name: Brent Reyes

Title: Water Conservation Specialist

Email: breyes@vid-h2o.org

2. Water Waste Prevention Documents

WW Document Name	WWP File Name	WW Prevention URL	WW Prevention Ordinance Terms Description
Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP.			Water Supply Response Program
Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area.			
Option C Describe any documentation of support for legislation or regulations that prohibit water waste.			
Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP.			
Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP.			
Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development.			

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Retail Coverage Report 2014

Foundational Best Managemant Practices for Urban Water Efficiency

BMP 1.1 Operation Practices **ON TRACK**

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.2 Water Loss Control **ON TRACK**

234 Vista Irrigation District

Completed Standard Water Audit Using AWWA Software?	Yes
AWWA File provided to CUWCC?	Yes
AWWA Free Water Audit Software 2014.xls	
AWWA Water Audit Validity Score?	91
Complete Training in AWWA Audit Method	Yes
Complete Training in Component Analysis Process?	Yes
Component Analysis?	Yes
Repaired all leaks and breaks to the extent cost effective?	Yes
Locate and Repar unreported leaks to the extent cost effective?	Yes
Maintain a record keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.	Yes

Provided 7 Types of Water Loss Control Info

Leaks Repairs	Value Real Losses	Value Apparent Losses	Miles Surveyed	Press Reduction	Cost Of Interventions	Water Saved (AF)
288	805662	86169	10	False	1700000	

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.3 Metering With Commodity

ON TRACK

234 Vista Irrigation District

Numbered Unmetered Accounts	No
Metered Accounts billed by volume of use	Yes
Number of CII Accounts with Mixed Use Meters	1164
Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	Yes
Feasibility Study provided to CUWCC?	Yes

Date: 1/10/2012

Uploaded file name:

Completed a written plan, policy or program to test, repair and replace meters	Yes
At Least As effective As	No
Exemption	No

Comments:

Meter reads= SF/134,252 MF/10,736 C/8,103 IN/4,786 INST/863 IR/8,051 OTHER/362

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.4 Retail Conservation Pricing

234 Vista Irrigation District

Implementation (Water Rate Structure)

Customer Class	Water Rate Type	Conserving Rate?	(V) Total Revenue Comodity Charges	(M) Total Revenue Fixed Carges
Single-Family	Increasing Block	Yes	15894899	7731814
Multi-Family	Increasing Block	Yes	5682084	1306599
Commercial	Increasing Block	Yes	2098873	763405
Industrial	Increasing Block	Yes	1071126	411241
Institutional	Increasing Block	Yes	1254816	211406
Dedicated Irrigation	Increasing Block	Yes	3593918	87935
Other	Increasing Block	Yes	168826	104556.34
			29764542	**10616956.34**

Calculate: V / (V + M) **74 %**

Implementation Option: Use Canadian Water Wastewater Association Rate Design Model

☐ Use 3 years average instead of most recent year

Canadian Water and Wastewater Association

Upload file:

Agency Provide Sewer Service: No

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

234 **Vista Irrigation District** **Retail**

Does your agency perform Public Outreach programs? Yes

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

San Diego County Water Authority

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

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

Public Outreach Program List	Number
General water conservation information	260
Email Messages	260
Newsletter articles on conservation	25000
Website	4165
Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets	75000
Total	**104685**

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

Number Media Contacts	Number
News releases	2
Articles or stories resulting from outreach	2
Total	**4**

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

Public Information Program Annual Budget

Annual Budget Category	Annual Budget Amount
Outreach Staff	34632
Publications	8050
Awards	850
Total Amount:	**43532**

Public Outreah Additional Programs
Speaker's Bureau

Description of all other Public Outreach programs

Comments:

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

VID participates and supports the San Diego County Water Authority's (SDCWA) outreach efforts. For more information on SDCWA outreach programs please see their BMP reports. Awards expenses include landscape & poster contest

At Least As effective As	No

Exemption	No	0

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.2 School Education Programs

ON TRACK

234 Vista Irrigation District **Retail**

Does your agency implement School Education programs? Yes

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

San Diego County Water Authority

Materials meet state education framework requirements? Yes

3rd & 4th grade history DVD. Be Water Smart DVD, Water Supply & Water Cycle posters, Watersheds Water & You for Splash Lab participants, Water is Life PowerPoint.

Materials distributed to K-6? Yes

3rd & 4th grade history DVD. Be Water Smart DVD, Water Supply & Water Cycle posters, Watersheds Water & You for Splash Lab participants, Water is Life PowerPoint

Materials distributed to 7-12 students? Yes (Info Only)

Scholarship contest hardcopy applications sent

Annual budget for school education program: 5620.00

Description of all other water supplier education programs

H2O, Where Do You Go? Assembly, Magic of Water Assembly, Splashtastic Assembly, Waterology Assembly

Comments:

Distribution numbers for school materials includes materials distributed by both the SDCWA and VID in VID's service territory.Education budget includes calendars and Splash Lab visits.

At Least As effective As No

Exemption No 0

CUWCC BMP Coverage Report 2014

234 Vista Irrigation District

Baseline GPCD: 173.78

GPCD in 2014 144.09

GPCD Target for 2018: 142.50

Biennial GPCD Compliance Table

ON TRACK

		Target		Highest Acceptable Bound	
Year	Report	% Base	GPCD	% Base	GPCD
2010	1	96.4%	**167.50**	100%	**173.80**
2012	2	92.8%	**161.30**	96.4%	**167.50**
2014	3	89.2%	**155.00**	92.8%	**161.30**
2016	4	85.6%	**148.80**	89.2%	**155.00**
2018	5	82.0%	**142.50**	82.0%	**142.50**

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APPENDIX E

Resolution No. 15-21
Water Supply Response Program

Resolution No. 14-29
Transitional Special Agricultural Water Rate Program

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RESOLUTION NO. 15-21

RESOLUTION OF THE BOARD OF DIRECTORS
OF THE VISTA IRRIGATION DISTRICT AMENDING THE DISTRICT'S
WATER SUPPLY RESPONSE PROGRAM

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 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, and 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, the Board of Directors of the Vista Irrigation District amended its Drought Response Conservation Program and renamed it the Water Supply Response Program on June 1, 2011; and

WHEREAS, amendment and enforcement of a comprehensive water conservation program will allow the Vista Irrigation District (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 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 Vista Irrigation 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 resolution 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 established a program for responding to water supply limitations; and

WHEREAS, this resolution contains levels and corresponding actions that will assist the District in meeting conservation targets; and

WHEREAS, the Vista Irrigation 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 Vista Irrigation 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 Vista Irrigation District's Urban Water Management Plan also includes a contingency analysis of actions to be taken in response to water supply shortages. This resolution is consistent with the Urban Water Management Plan adopted by the Vista Irrigation District; and

WHEREAS the water-use efficiency practices, water conservation measures and progressive restrictions on water use and method of use identified by this resolution provide certainty to water users and enable Vista Irrigation 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; and

WHEREAS, this resolution contains water-use efficiency practices, water conservation measures and water use restrictions that will aid the Vista Irrigation District in complying with the Governor's April 1, 2015 Executive Order and State Water Resources Control Board emergency regulations implementing mandatory water conservation measures to reduce water usage by 25 percent statewide as well as Senate Bill 7 of the Seventh Extraordinary Session (SBX 7-7) which requires urban retail water suppliers to reduce urban per capita water use 20 percent by 2020 (20 X 2020); and

WHEREAS, a public hearing was held upon the proposed amended Water Supply Response Program at the special meeting on May 27, 2015, at which all present were given an opportunity to be heard on the proposed amended Program; and

WHEREAS, the Board of Directors has considered the proposed amended Water Supply Response Program and the evidence and testimony presented at the May 27, 2015 public hearing.

NOW, THEREFORE, the Board of Directors of the Vista Irrigation District does resolve as follows:

ARTICLE ONE: The Water Supply Response Program is amended and restated, in its entirety as follows:

SECTION 1.0 DECLARATION OF NECESSITY AND INTENT

(a) This resolution 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 Vista Irrigation District 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 resolution establishes regulations to be implemented at all times including during times of declared water shortages or declared water shortage emergencies. It establishes four levels of actions, with increasing restrictions on water use in response to worsening water supply conditions and decreasing available supplies.

(c) During Levels 1 through 4, all water-use efficiency practices, water conservation measures and water use restrictions are mandatory and become increasingly restrictive in order to attain escalating conservation goals.

(d) During all Levels, violations of water-use efficiency practices, water conservation measures and water use restrictions established by this resolution are subject to criminal, civil, and administrative remedies and penalties, including fees specified in this resolution.

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 Water Authority's Special Agricultural Water Rate program.

2. "District" means the Vista Irrigation District

3. "Water Authority" means the San Diego County Water Authority.

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 District.

SECTION 3.0 APPLICATION

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

(b) This resolution is intended to maintain efficient water use practices and to further the conservation of water. It is not intended to implement any provision of federal, State, or local statutes, resolutions, 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 resolutions and stormwater management plans.

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

(d) The provisions of this resolution do not apply to use of water from private wells or to recycled water.

(e) Nothing in this resolution shall apply to use of water that is subject to a special supply program, such as the Water Authority's Special Agricultural Water Rate program. 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 District is subject to this resolution in the use of the other water.

(f) When the General Manager has determined that the District's water supply is in a water emergency condition, everyone shall be required to reduce their water consumption as prescribed by the General Manager.

(g) The General Manager shall have the authority and discretion to interpret and apply the provisions set forth in the Water Supply Response Program as long as the interpretations and applications of the measures meet the intent and goals of the Program.

SECTION 4.0 LEVEL 1 – WATER EFFICIENCY

(a) Level 1 is also referred to as the "Water Efficiency" level. Level 1 applies at all times unless the District Board of Directors has declared another level, per the procedures set forth in this resolution. Level 1 is designed to ensure customers use water efficiently and eliminate water waste at all times.

(b) At Level 1, the District will utilize its public education and outreach efforts to raise public awareness of the following mandatory water-use efficiency practices:

1. No 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 or to maintain, repair, construct/reconstruct streets.

2. No water waste resulting from inefficient landscape irrigation, such as runoff, low head drainage, or overspray, etc. Similarly, water shall not flow onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.

3. No irrigating residential or commercial landscapes during or within 48 hours following measurable rainfall.

4. Irrigate residential and commercial landscape with in-ground or hose-end sprinkler systems before 8 a.m. and after 8 p.m. only. Irrigation of new turf and/or plantings is exempt from these watering hour restrictions for a period of thirty (30) days following the date of planting. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used.

5. Irrigate nursery and commercial grower's products before 8 a.m. and after 8 p.m. only. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used. Irrigation of nursery propagation beds is permitted at any time. Watering of livestock is permitted at any time.

6. Use potable water taken through construction meters to irrigate landscape before 8 a.m. and after 8 p.m. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used.

7. Irrigate landscape outside of newly constructed homes and buildings in a manner that is consistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development.

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

9. 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.

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

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

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

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

SECTION 5.0 LEVEL 2 – WATER CONSERVATION

(a) A Level 2 may be declared under the following conditions: 1) when the Water Authority notifies its member agencies that due to cutbacks caused by drought or other reduction in supplies, a consumer demand reduction is required in order to have sufficient supplies available to meet anticipated demands; 2) when a consumer demand reduction is required by a regulatory agency; or 3) when other conditions exist that require a consumer demand reduction. The consumer demand reduction amounts in Level 2 are typically up to 20 percent, although the District Board of Directors may declare Level 2 and implement the mandatory Level 2 conservation measures identified in this resolution to achieve a consumer demand reduction of a different amount. The General Manager shall have the authority and discretion to implement water conservation measures commensurate with the level of demand reduction required and/or the reduction targets achieved, as described in Section 5 (b) below. The General Manager shall inform the Board of Directors of the status of the implementation of the measures set forth in this section and the resulting water conservation in a timely manner.

(b) All persons using District water shall comply with Level 1 water-use efficiency practices during Level 2, and shall also comply with the following additional conservation measures:

1. Stop watering ornamental turf in public street medians with potable water.

2. Irrigate residential and commercial landscape with in-ground or hose-end sprinkler systems before 8 a.m. and after 8 p.m. only.

3. Irrigate nursery and commercial grower's products before 8 a.m. and after 8 p.m. only. Watering by nurseries and commercial growers is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used. Irrigation of nursery propagation beds is permitted at any time. Watering of livestock is permitted at any time.

4. Irrigation of landscape on a construction project with potable water taken through a construction meter before 8 a.m. and after 8 p.m. only.

5. Limit residential and commercial landscape irrigation to assigned days per week and limited duration times on a schedule established by the General Manager and posted by the District. This section shall not apply to commercial growers or nurseries for water that they use for agricultural purposes.

6. Limit lawn watering and landscape irrigation using in-ground or hose-end sprinklers to time limits per watering station per assigned day as established by the General Manager and posted by the District. This provision does not apply to landscape irrigation systems using drip/micro-irrigation systems and stream rotor sprinklers.

7. Turf and/or plant establishment is allowed if required by a landscape permit or necessary for erosion control, landscape renovation after a natural disaster, or establishment, repair or renovation of public use fields for schools or parks. New turf and/or plantings are exempt from irrigation limitations set forth in sections 4 (b) (3), 5 (b) (1) and 5 (b) (2) for a period of thirty (30) days following the date of planting.

8. Water landscaped areas, including trees and shrubs located on residential and commercial properties, and not irrigated by a landscape irrigation system, before 8 a.m. and after 8 p.m. only by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation per assigned day as established by the General Manager and posted by the District.

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

10. Commercial and agricultural customers are asked to implement all measures practicable toward improving efficiency and conserving water.

SECTION 6.0 LEVEL 3 – WATER SHORTAGE

(a) Level 3 may be declared under the following conditions: 1) when the Water Authority notifies its member agencies that due to increasing cutbacks caused by drought or other reduction of supplies, a serious water shortage condition exists that requires extensive consumer demand reductions in order to have sufficient supplies available to meet anticipated demands; 2) when a similar requirement is imposed by a regulatory agency; or 3) when other conditions exist that require a serious consumer demand reduction. The consumer demand reduction amounts in Level 3 are typically up to 40 percent, although the District Board of Directors may declare Level 3 and implement the Level 3 conservation measures identified in this resolution to achieve a consumer demand reduction of a different amount. The General Manager shall have the authority and discretion to implement water conservation measures commensurate with the level of demand reduction required and/or the reduction targets achieved, as described in Section 6 (b) below. The General Manager shall inform the Board of Directors of the status of the implementation of the measures set forth in this section and the resulting water conservation in a timely manner.

(b) All persons using District water shall comply with Level 1 water-use efficiency practices and Level 2 water conservation practices during Level 3 and shall also comply with the following additional mandatory conservation measures:

1. Comply with any new residential and commercial landscape irrigation restrictions relative to assigned days per week and limited duration times on a schedule established by the General Manager and posted by the District.

2. Stop re-filling pools/spas more than one foot per week. Draining and re-filling of pools and spas is not permitted except to repair leaks or for health and safety reasons.

3. Stop filling or re-filling ornamental lakes or ponds, 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 another level under this resolution.

4. Stop operating ornamental fountains or decorative water features These types of fountains and water features may be operated on a limited basis for maintenance purposes only. The operation of fountains and water features that do not use re-circulated water is prohibited.

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

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

(c) Upon the declaration of Level 3, 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 been issued for the project; or

2. The project is necessary to protect the public's health, safety, and welfare; or

3. The applicant participates in a District-approved demand offset program that produces or saves at least the same amount of water as is being used by the new development, prior to the issuance by the District of a new water meter or water meters for the project.

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.

(d) Upon the declaration of Level 3, District will suspend consideration of annexations to its service area.

(e) The District may establish a water allocation for property served by the District using a method that does not penalize persons for the implementation of conservation methods or the installation of water saving devices. If the District establishes a water allocation it shall provide notice of the allocation by including it in the regular billing statement for water service or by any other mailing to the address to which the District customarily mails the billing statement for fees or charges for on-going water service. Following the effective date of the water allocation as established by the District, any person that uses water in excess of the allocation shall be subject to a penalty for each billing unit of water in excess of the allocation. The penalty for excess water usage shall be cumulative to any other remedy or fee that may be imposed for violation of this resolution.

SECTION 7.0 LEVEL 4 – WATER EMERGENCY

(a) Level 4 applies under the following conditions: 1) 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 an emergency demand reduction in order for the District to maximize supplies available to meet anticipated demands; 2) when a similar requirement is imposed by a regulatory agency; or 3) when other conditions exist that require the Board of Directors to declare a water shortage emergency. The consumer demand reduction amounts in Level 4 typically exceed 40 percent, although the District Board of Directors shall declare a Level 4 emergency in the manner and on the grounds provided in California Water Code section 350.

(b) All persons using District water shall comply with water-use efficiency practices and conservation measures required under Level 1, Level 2, and Level 3 and shall also comply with the following additional mandatory conservation measures:

1. Stop all residential and commercial landscape irrigation, unless the District has determined that recycled water is available and may be lawfully applied to the use. This restriction shall not apply to the following categories of 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 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.

H. Irrigation of crops and landscape products of commercial growers and nurseries.

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

(c) The District may establish a water allocation for property served by the District. If the District establishes a water allocation it shall provide notice of the allocation by including it in the regular billing statement for water service or by any other mailing to the address to which the District customarily mails the billing statement for fees or charges for on-going water service. Following the effective date of the water allocation as established by the District, any person that uses water in excess of the allocation shall be subject to a penalty for each billing unit of water in excess of the allocation. The penalty for excess water usage shall be cumulative to any other remedy or fee that may be imposed for violation of this resolution.

SECTION 8.0 PROCEDURES FOR DETERMINATION AND NOTIFICATION OF LEVEL OF ACTION

(a) Level 1 under this Program applies at all times unless the District Board of Directors has declared Level 2, 3 or 4, per the procedures set forth in this section. The District shall, at a minimum, provide notice of a Level 1 declaration and condition by news release and by posting information on the District's website.

(b) The existence of a Level 2 or Level 3 may be declared by resolution of the District Board of Directors adopted at a regular or special public meeting held in accordance with State law. The mandatory conservation measures applicable to Level 2 or Level 3 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 level, the District shall publish a copy of the resolution in a newspaper used for publication of official notices.

(c) The existence of Level 4 may be declared in accordance with the procedures specified in California Water Code sections 351 and 352. The mandatory conservation measures applicable to Level 4 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 level, the District shall publish a copy of the resolution in a newspaper used for publication of official notices. If the District 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 District 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 District Board of Directors may declare an end to a level by the adoption of a resolution at any regular or special meeting held in accordance with State law.

(e) The District shall notify customers of any changes in levels or water use restrictions using multiple communication methods.

SECTION 9.0 NON-COMPLIANCE AND FEES

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

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

(c) Water Conservation Fees, as set forth in Section 4.4.17 of the District's Rules and Regulations, may be levied for each violation of a provision of this resolution as follows:

1. A first violation of any provision of this resolution shall result in a letter of warning.

2. A second violation of any provision of this resolution within one year shall result in the assessment of a Water Conservation Fee.

3. A third violation of this resolution within one year shall result in the assessment of an additional Water Conservation Fee.

4. Four or more violations of any provision of this resolution shall result in the assessment of additional Water Conservation Fees.

(d) Violation of a provision of this resolution is subject to enforcement through installation of a flow-restricting device in the meter. The cost of installing and removing a flow-restricting device will be paid for by the person, who uses, causes to be used, or permits the use of water in violation of this resolution.

(e) Each violation of this resolution 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 Level 4 may be enforced by discontinuing service to the property at which the violation occurs as provided by Water Code section 356. The cost of disconnecting and re-connecting water service be paid for by the person, who uses, causes to be used, or permits the use of water in violation of this resolution.

(g) All fees and costs associated with installing and removing a flow-restricting device and disconnecting and re-connecting water service will be added to the account of the person, who uses, causes to be used, or permits the use of water in violation of this resolution. Fees and costs will appear on and be payable with the first billing statement for the period the violation occurred and be subject to the same remedies that are imposed by the District for failure to pay other charges.

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

SECTION 10.0 APPEALS

(a) Any person complaining about fees and/or other remedies applied in accordance with Section 9 of this resolution shall have that complaint be first taken up with the General Manager before any action will be taken by the District's Board of Directors.

(b) The General Manager's determination may be appealed in writing within ten days of the mailing of a notice of determination. Any determination not timely appealed shall be final.

(c) The person appealing the General Manager's determination shall submit a written request to the Board Secretary to have his or her appeal considered as an item for discussion and action at an upcoming Board meeting. The written request shall include: 1) a description of the issues, 2) evidence supporting the claim, and 3) a request for resolution of the dispute.

(d) The District shall at least ten days before the date of the hearing mail an appropriate notice of the regular or special meeting at which the appeal will be heard. The Board may, in its discretion, affirm, reverse or modify the determination.

ARTICLE TWO: This resolution shall take effect immediately upon adoption or as otherwise established by State law for Vista Irrigation District.

PASSED AND ADOPTED by the following roll call vote of the Board of Directors of the Vista Irrigation District this 27th day of May, 2015:

AYES: Directors Miller, Vasquez, Dorey, Reznicek, and MacKenzie
NOES: None
ABSTAIN: None
ABSENT: None

Jo MacKenzie, President

ATTEST:

Lisa R. Soto, Secretary
Board of Directors
Vista Irrigation District

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RESOLUTION NO. 14-29

RESOLUTION OF THE VISTA IRRIGATION DISTRICT
ADOPTING RULES AND REGULATIONS PERTAINING TO THE
TRANSITIONAL SPECIAL AGRICULTURAL WATER RATE

WHEREAS, the Board of Directors of the San Diego County Water Authority extended its Transitional Special Agricultural Water Rate on June 26, 2014; and

WHEREAS, the Board of Directors of the Vista Irrigation District approved participation in San Diego County Water Authority's Transitional Special Agricultural Water Rate; and

WHEREAS, participation in this program necessitates that rules be adopted pursuant to Transitional Special Agricultural Water Rate requirements.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Vista Irrigation District, as follows:

TRANSITIONAL SPECIAL AGRICULTURAL WATER RATE

1.1 Definitions

A. *CWA*: San Diego County Water Authority.

B. *Interim Agricultural Water Program*: The Interim Agricultural Water Program (IAWP), which terminated on December 31, 2012, was an agricultural water discount program offered by the Metropolitan Water District of Southern California.

D. *MWD*: Metropolitan Water District of Southern California.

E. *Owner*: Owner of Record per the County of San Diego.

F. *Reduction in Delivery*: Reduction in delivery to TSAWR customers will be the percentage rate cutback established by MWD under a shortage action. At least a 5 percent differential between the CWA M&I cutback level and the TSAWR cutback level will also be maintained.

G. *Transitional Special Agricultural Water Rate* (TSAWR): The TSAWR adopted by CWA's Board on March 25, 2010 and extended on April 26, 2012 and June 26, 2014, wherein an agricultural water discount for treated water and untreated water shall be applied to water purchased by those water agencies participating in the TSAWR.

H. *VID*: Vista Irrigation District

1.2 Qualification to Participate in this Program: Only properties that were enrolled in the IAWP program as of January 1, 2008, are eligible to participate in the TSAWR. The rules require that the program be limited to water used for: "The growing or raising, in conformity with recognized practices of husbandry, for the purposes of commerce, trade, or industry, of agricultural, horticultural, or floricultural products, and produced: (1) for human consumption or for the market; (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, such products to be grown are raised on a parcel of land having an area of not less than one acre utilized exclusively therefore."

1.3 Duration of Program: The TSAWR program ends on December 31, 2015; however, the program duration may be extended by CWA. If the TSAWR program duration is extended, the program rules remain in effect until the program rules are amended or the program terminates. Once an owner has entered into this program, the owner's land will be subject to the conditions of this program for the duration of the program unless the agricultural owner's lands no longer qualify for the program or the owner terminates participation in the program, subject to the conditions specified below. It is the intent of the VID Board of Directors that the benefits and obligations of the program shall run with the land and not with the owner, and it is the responsibility of the owner to disclose that the land is subject to this program.

1.4 Request to Terminate Participation in Program: Owners enrolling in the program are able to terminate participation (opt-out) in the program effective January 1 of the following year. Should a shortage action be taken while a parcel is enrolled in the TSAWR program or in the year immediately following the year that a participant has opted out that parcel will be subject to TSAWR delivery reductions for the duration of the shortage action. Once an owner terminates participation in the program, he/she may not re-enroll.

1.5 Amount of Discount to be Passed on to District Agricultural Customers: A discounted commodity rate will be applied to each individual agricultural account in an amount equal to the TSAWR discount received from CWA. VID will use a melded rate, based on the TSAWR for treated and untreated water, as the discount.

1.6 Parcels served by multiple meters: If a parcel qualifying under this program is served by more than one meter, then all meters shall be considered included in this program and will be subject to a Reduction in Delivery.

1.7 Agricultural Meters Serving One or More Homes: When a meter supplies water to a parcel qualifying under this program which contains one or more residences, the first 26 units of water delivered per month shall be considered domestic water and shall be billed at the District's domestic water rate. The TSAWR shall only apply to that water used after the first 26 units of water per month.

1.8 Execution of Program Forms: The Certification and Acknowledgment Form must be signed by the owner of the property and shall be recorded against the property. In cases where the owner has given the proper power of attorney to an agent, the agent may execute the Certification and Acknowledgment Form by providing a copy of the power of attorney to the District.

1.9 Verification of Program Qualifications: The District may require proof that the agricultural products raised by the owner were produced for human consumption or for the market by furnishing the District with copies of bills of sale or other documentation acceptable to the District.

1.10 Liability for TSAWR Rates, Fees, Penalties and Charges as Required by VID: Should VID determine that water purchased under this program was done so under the basis of incorrect information supplied by the applicant or used for purposes other than agricultural purposes as defined in Section 1.2, VID may assess rates, fees, penalties and charges. The District shall assess the then current owner these rates, fees, penalties and charges even though the then current owner may not have been the owner executing the Certification and Acknowledgment Form.

1.11 Interruption in Delivery of Water: The owner shall certify and acknowledge by executing the Certification and Acknowledgment Form or Request to Terminate Participation Form that he/she further acknowledges that his/her parcel is subject to reductions in delivery up to full interruption based on water supply conditions as determined by VID. For owners who have terminated participation in the program after January 1 of a given year, the condition that their parcels are subject to reductions in delivery up to full interruption remain in place for the duration of the shortage action.

1.12 VID Matching Agricultural Rate: The VID Board authorizes a matching reduction in water rates for local water to any agricultural customer participating in CWA's TSAWR program.

1.13 Non-Compliance, Penalty Water Rates and Fees

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

B. Each day that a violation of this resolution occurs is a separate offense.

C. Water usage in excess of required reductions, as set forth in Section 1.1 F, will be billed at the TSAWR plus a penalty water rate.

D. Water Conservation Fees, as set forth in Section 4.4.17 of the District's Rules and Regulations, may be levied for each violation of a provision of this resolution as follows:

1. A first violation of any provision of this resolution shall result in a letter of warning.

2. A second violation of any provision of this resolution within one year shall result in the assessment of a Water Conservation Fee.

3. A third violation of this resolution within one year shall result in the assessment of an additional Water Conservation Fee.

4. Four or more violations of any provision of this resolution shall result in the assessment of an additional Water Conservation Fees.

E. Violation of a provision of this resolution is subject to enforcement through installation of a flow-restricting device in the meter. The cost of installing and removing a flow-restricting device will be paid for by the person, who uses, causes to be used, or permits the use of water in violation of this resolution.

F. All fees and costs associated with installing and removing a flow-restricting device and disconnecting and re-connecting water service will be added to the account of the person, who uses, causes to be used, or permits the use of water in violation of this resolution. Fees and costs will appear on and be payable with the first billing statement for the period the violation occurred and be subject to the same remedies that are imposed by the District for failure to pay other charges.

G. All remedies provided for herein shall be cumulative and not exclusive. In addition, remedies may be invoked, combined, or accelerated based on the timing and severity of the violation.

1.14 Appeals

A. Any person complaining about fees and/or other remedies applied in accordance with Section 1.13 shall have that complaint be first taken up with the General Manager before any action will be taken by the District's Board of Directors.

B. The General Manager's determination may be appealed in writing within ten days of the mailing of a notice of determination. Any determination not timely appealed shall be final.

C. The person appealing the General Manager's determination shall submit a written request to the Board Secretary to have his or her appeal considered as an item for discussion and action at an upcoming Board meeting. The written request shall include: 1) a description of the issues, 2) evidence supporting the claim, and 3) a request for resolution of the dispute.

D. The District shall at least ten days before the date of the hearing mail an appropriate notice of the regular or special meeting at which the appeal will be heard. The Board may, in its discretion, affirm, reverse or modify the determination.

PASSED AND ADOPTED by the Board of Directors of the Vista Irrigation District this 22nd day of October, 2014 by the following roll call vote:

AYES: Directors Miller, Vásquez, Franklin, MacKenzie, and Dorey
NOES: None
ABSTAIN: None
ABSENT: None

Paul E. Dorey, President

ATTEST:

Lisa R. Soto, Secretary
Board of Directors
VISTA IRRIGATION DISTRICT