

2015

Urban Water Management Plan

for the

Contra Costa Water District



June 2016

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CONTRA COSTA WATER DISTRICT

URBAN WATER MANAGEMENT PLAN

June 2016

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Acronyms and Abbreviations

AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACWD	Alameda County Water District
AF	acre-feet
AFY	acre-feet per year
BARR	Bay Area Regional Reliability
BAWSCA	Bay Area Water Supply and Conservancy Agency
Bay Area	San Francisco Bay Area
BDCP/CWF	Bay Delta Conservation Plan/California Water Fix
BMPs	best management practices
CalWARN	California Water/Wastewater Agency Response Network
CCCSD	Central Contra Costa Sanitation District
CCWD	Contra Costa Water District
cfs	cubic feet per second
CII	Commercial, Institutional, and Industrial
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Program
CNWS	Concord Naval Weapons Station
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CWC	California Water Code
DDSD	Delta Diablo Sanitation District
DEC/LMEC	Delta Energy Center and Los Medanos Energy Center
Delta	Sacramento-San Joaquin Delta
DMM	Demand Management Measure
DMP	Drought Management Program
DOF	California Department of Finance
DPR	direct potable reuse
DWD	Diablo Water District
DWR	Department of Water Resources
EBMUD	East Bay Municipal Utility District
ECCID	East Contra Costa Irrigation District
EOP	Emergency Operations Plan
FWSS	Future Water Supply Study
FY	fiscal year
GHG	greenhouse gas

gpcd	Gallons per capita per day
IPR	indirect potable reuse
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
ISD	Ironhouse Sanitary District
LVE	Los Vaqueros Expansion
LVP	Los Vaqueros Project
MAF	million acre-feet
mgd	million gallons per day
MMWD	Marin Municipal Water District
MOU	Memorandum of Understanding
MPP	multi-purpose pipeline
MVSD	Mountain View Sanitation District
M&I	Municipal and Industrial
OCAP	Operational Criteria and Plan
PPIC	Public Policy Institute of California
RBWTP	Randall-Bold Water Treatment Plant
Reclamation	United States Bureau of Reclamation
RWF	recycled water facility
SB	Senate Bill
SCVWD	Santa Clara Valley Water District
SFPUC	San Francisco Public Utilities Commission
SRIP	Seismic Reliability Improvement Project
SWP	State Water Project
TWMP	Treated Water Master Plan
TWSA	Treated Water Service Area
UV	ultraviolet
UWMP	Urban Water Management Plan
WTP	water treatment plant
WWTP	wastewater treatment plant
Zone 7	Zone 7 Water Agency

1. Executive Summary

The 2015 Urban Water Management Plan (UWMP) for the Contra Costa Water District (CCWD or District) is an update to the plan adopted by the District's Board of Directors (Board) in June 2011 and is prepared in compliance with the California Urban Water Management Planning Act. As required by California Water Code (CWC) Section 10620, all urban water suppliers, 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 (AF) annually are required to prepare a UWMP. The UWMP includes the District's planning activities to ensure adequate water supplies to meet existing and future demands for water. One of the foundational documents relied upon to develop and update the UWMP is the Future Water Supply Study (FWSS), the District's long-term water supply plan. The 2015 UWMP presents information on the District's supply and demand forecasts, conservation programs, water shortage contingency planning, and recycled water opportunities to the year 2040. The 2015 UWMP summarizes the status of the District's water demand management measures (DMMs, also known as best management practices or BMPs). The UWMP also includes a description of the plan adoption, public coordination, and planning coordination activities. The 2015 UWMP addresses the requirements of the Water Conservation Bill of 2009 (SB X7-7) with an updated evaluation of baseline, interim 2015, and 2020 per capita water use targets, including data demonstrating that the District is meeting its interim 2015 target.

Completion of a UWMP is required for a water supplier to be eligible for Department of Water Resources (DWR) administered state grants and loans and drought assistance. It is also a source of information for Water Supply Assessments required by Senate Bill 610 and Written Verifications of Water Supply required by Senate Bill 221. The CCWD UWMP meets all requirements of the California Urban Water Management Planning Act.

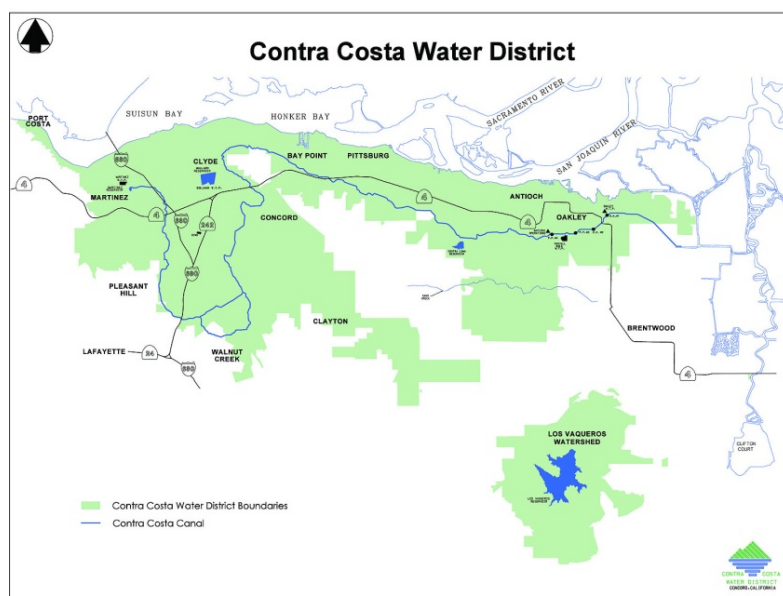
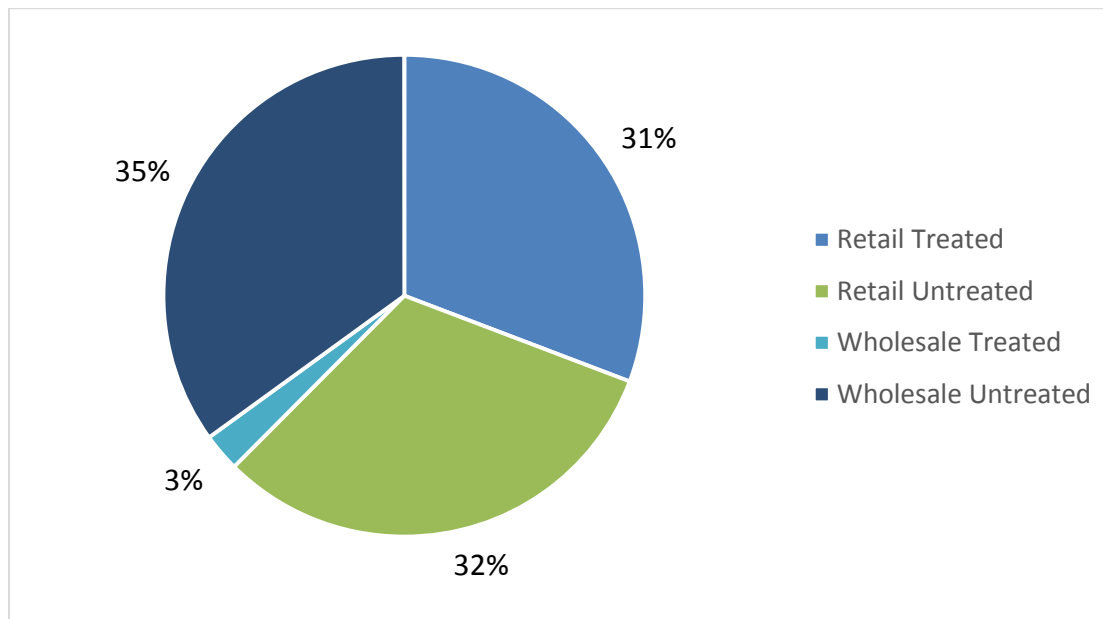
1.1. District Background

CCWD provides water to approximately 500,000 people in Contra Costa County. CCWD's service area is shown in Figure E-1 and encompasses most of central and northeastern Contra Costa County, a total area of more than 140,000 acres (including the Los Vaqueros watershed area of approximately 19,000 acres). CCWD operates and maintains a complex system of water transmission, treatment, and storage facilities to supply both treated and untreated (raw) water to its customers. Formed in 1936 to provide water for irrigation and industry, CCWD is now one of the largest urban water districts in California and a leader in drinking-water treatment technology and protection of the Sacramento-San Joaquin Delta (Delta).

CCWD is both a retail and wholesale water supplier. As a retailer, CCWD provides treated water to approximately 200,000 customers in Clayton, Clyde, Concord, Pacheco, Port Costa and parts of Martinez, Pleasant Hill and Walnut Creek. CCWD also provides retail untreated water to industrial and irrigation customers. As a wholesaler, CCWD provides treated water to the City of Antioch, the Golden State Water Company in Bay Point, and a portion of the City of Brentwood. CCWD also provides wholesale untreated water to the cities of Antioch, Martinez, and Pittsburg,

and Diablo Water District. **Figure 1-1** depicts CCWD's broad customer categories and their water use relative to total water use.

Figure 1-1: CCWD Customer Categories



CCWD pumps water from four intakes in the Sacramento-San Joaquin Delta (Delta). The intakes are located at Rock Slough, Old River, Victoria Canal, and Mallard Slough. The backbone of the District's water conveyance system is the 48-mile Contra Costa Canal, which starts at Rock Slough and ends at the Martinez Reservoir.

A more detailed discussion of the District's service area and major infrastructure is provided in Chapter 3 of the UWMP.

1.1.1. Water Quality

CCWD's mission is to "strategically provide a supply of high-quality water at the lowest cost possible, in an environmentally responsible manner." CCWD obtains its water supply exclusively from the Sacramento-San Joaquin Delta and all of CCWD's intakes are subject to variations in water quality caused by salinity intrusion, Delta hydrodynamics, and discharges into the Delta and its tributary streams from both point and non-point sources. Since 1992, the District has spent over \$1.3 billion on capital improvements, including \$450 million on the Los Vaqueros Project, as well as over \$500 million on projects directly related to improving water quality and the security of the District's water delivery system (such as improvements at both the Bollman and Randall-Bold Water Treatment Plants (WTPs), construction of the Multi-Purpose Pipeline, improvements at Contra Loma Reservoir, Middle River Intake, Los Vaqueros Reservoir Expansion, and other District projects). Notwithstanding these efforts, Delta water quality at the District's intakes (as measured by chlorides) has declined significantly over the last 20 years, affecting the reliability of the District's supplies and its ability to consistently provide high-quality water to its customers. Climate change, Delta levee failure, changes to Delta water quality and flow standard regulations, changes to facilities and operations of the State Water Project and Central Valley Project and implementation of habitat restoration projects in the Delta have the potential to further degrade water quality in the Delta. The increase in chlorides directly impacts the performance of the Los Vaqueros Project by requiring additional blending releases from the reservoir to meet the District's water quality objectives. A discussion of the reliability of the District's water supplies and water quality is included in Chapter 7.

CCWD is implementing ongoing comprehensive water quality strategies to protect and improve source and treated water quality for its customers. CCWD's multi-pronged approach includes seeking improved water quality sources, reducing impacts of Delta agricultural drainage on source water quality, participating in collaborative research on advanced treatment of Delta water, and supporting regulatory and legislative initiatives for improving drinking water quality and source water protection.

1.2. Current and Future Water Demand

CWC Section 10631 requires the UWMP to include past and future population and demand projections in five-year increments over the next 20 years. The UWMP uses the terms water demand and water use interchangeably. The demand projections presented in Chapter 4 of the UWMP are consistent with the District's FWSS and were developed in coordination with the District's municipal customers. Factors influencing future water demand such as weather and growth in population were considered.

1.2.1. Population Trends

The San Francisco Bay Area (Bay Area) as a region has experienced a large level of growth in recent decades, with over two million people added to the population since 1980. The population in Contra Costa County has grown rapidly due to the availability of land and the trend toward increased suburban growth. Over one-third of Contra Costa County's most recent population

increase took place in East County. Population projections are based on data provided in the 2013 Association of Bay Area Governments (ABAG) Bay Area Plan Projections book, which provides population, household, and economic forecasts for the nine-county Bay Area region. Population projections for CCWD's entire service area are provided in **Table 1-1**. Population projections for the retail Treated Water Service Area are provided in **Table 1-2**.

Table 1-1: CCWD Service Area Population							
	DOF^(a)		Projections from ABAG^(b)				
	2010	2015	2020	2025	2030	2035	2040
Antioch	102,370	108,300	108,900	112,400	116,200	120,300	124,600
Brentwood (inside CCWD) ^(c)	10,090	11,070	10,580	10,860	11,130	11,450	11,780
Clayton	10,900	11,290	11,100	11,400	11,400	11,500	11,600
Concord	122,070	126,070	128,500	141,100	154,000	167,500	181,500
Martinez	34,390	35,890	35,620	36,480	37,250	38,210	39,170
Oakley	35,430	38,790	41,600	44,700	48,200	51,700	55,400
Pittsburg	63,260	67,630	72,000	76,500	81,300	86,400	91,600
Pleasant Hill	26,460	27,260	27,450	28,010	28,650	29,370	30,080
Walnut Creek	26,500	27,620	28,870	30,110	31,430	32,870	34,320
Contra Costa County Unincorporated Area	22,370	23,570	23,260	23,760	24,290	24,910	25,550
Subtotal	453,840	477,480	487,880	515,320	543,850	574,210	605,600
Brentwood (remaining) ^(d)	41,390	45,420	43,420	44,540	45,670	46,950	48,320
Total	495,230	522,900	531,300	559,860	589,520	621,160	653,920
NOTES: (a) Data from California Department of Finance. Estimates include 2010 Census results. Population proportioned based on area for Cities not entirely within the District's boundary. (b) Data from ABAG's Bay Area Plan Projections 2013. (c) In 2004 CCWD entered into an agreement with the City of Brentwood for design, construction and operation of the City of Brentwood Water Treatment Plant, adjacent to the Randall-Bold Water Treatment Plant. The plant delivers water to residents within Brentwood City limits. (d) A portion of the City of Brentwood is within the CCWD's service area. The remaining portion is noted above. The City of Brentwood water supply includes local groundwater and surface water delivered under contract from ECCID. CCWD pumps, treats, and delivers the ECCID water under contract with the City of Brentwood.							

Table 1-2: CCWD Treated Water Service Area Population

	DOF ^(a)		Projections from ABAG ^(b)				
	2010	2015	2020	2025	2030	2035	2040
Clayton	10,900	11,290	11,100	11,400	11,400	11,500	11,600
Concord	122,070	126,070	128,500	141,100	154,000	167,500	181,500
Martinez	6,230	6,510	6,460	6,610	6,750	6,930	7,100
Pleasant Hill	25,790	26,580	26,760	27,310	27,930	28,630	29,330
Walnut Creek	21,240	22,130	23,140	24,130	25,190	26,350	27,510
Contra Costa County Unincorporated Area	6,750	7,110	7,010	7,160	7,330	7,510	7,710
Total	192,980	199,680	202,970	217,710	232,600	248,420	264,750

NOTES:

(a) Data from California Department of Finance. Estimates include 2010 Census results.

(b) Data from ABAG's Bay Area Plan Projections 2013.

1.2.2. Water Demand

Actual 2015 demands and future demand projections presented in the UWMP are consistent with the FWSS and are summarized in **Table 1-3**. Due to drought conditions and State-mandated conservation requirements, 2015 water demands were significantly reduced. For water supply planning purposes, future demand projections are based on maximum dry-year demands not impacted by drought-related water shortage or economic conditions. Demand projections are discussed in more detail in Chapter 4 of the UWMP.

Table 1-3: Current and Projected Water Demand (AFY)

WATER USE SECTORS	2015 Actual	2020	2025	2030	2035	2040
WHOLESALE						
Treated	3,400					
Untreated	27,460					
Local Supplies ^(b)	3,690					
Subtotal (Wholesale)	34,560	50,000	53,600	57,900	61,800	64,500
RETAIL						
Treated Water Service Area ^(c)	24,900	41,100	42,600	44,100	46,200	48,800
Major Industrial (untreated) ^(d)	30,890	40,400	40,900	41,400	42,000	42,500
Irrigation (untreated)	1,050	1,800	1,800	1,800	1,800	1,800
Estimated Groundwater	3,000	3,200	3,200	3,300	3,300	3,400
Subtotal (Retail)	58,840	86,500	88,500	90,600	93,300	96,500
RECYCLED WATER	9,200	15,000	16,100	16,900	17,700	17,800
Untreated Water System Losses ^(e)	10,920	12,200	12,200	12,200	12,200	12,200
Total UWMP Service Area Demands	113,620	163,700	170,400	177,600	185,000	191,000
Contract deliveries outside Service Area ^(f)	5,800	6,700	7,000	7,600	8,000	8,300
Total Deliveries	119,420	170,400	177,400	185,200	193,000	199,300

NOTES:

(a) Future projections include total water demands irrespective of source of supply, except for conservation savings. The future projections have been adjusted to account for anticipated reductions resulting from conservation savings. Recycled water is shown as a separate line item and does not include CCCSD plant use, per the DWR UWMP guidebook.

(b) Local supplies are obtained and managed by municipal customers and not delivered by CCWD. Includes City of Antioch's San Joaquin River diversions and groundwater usage by the Diablo Water District, Golden State Water Company, and the City of Pittsburg.

(c) TWSA demands include treated water distribution system losses.

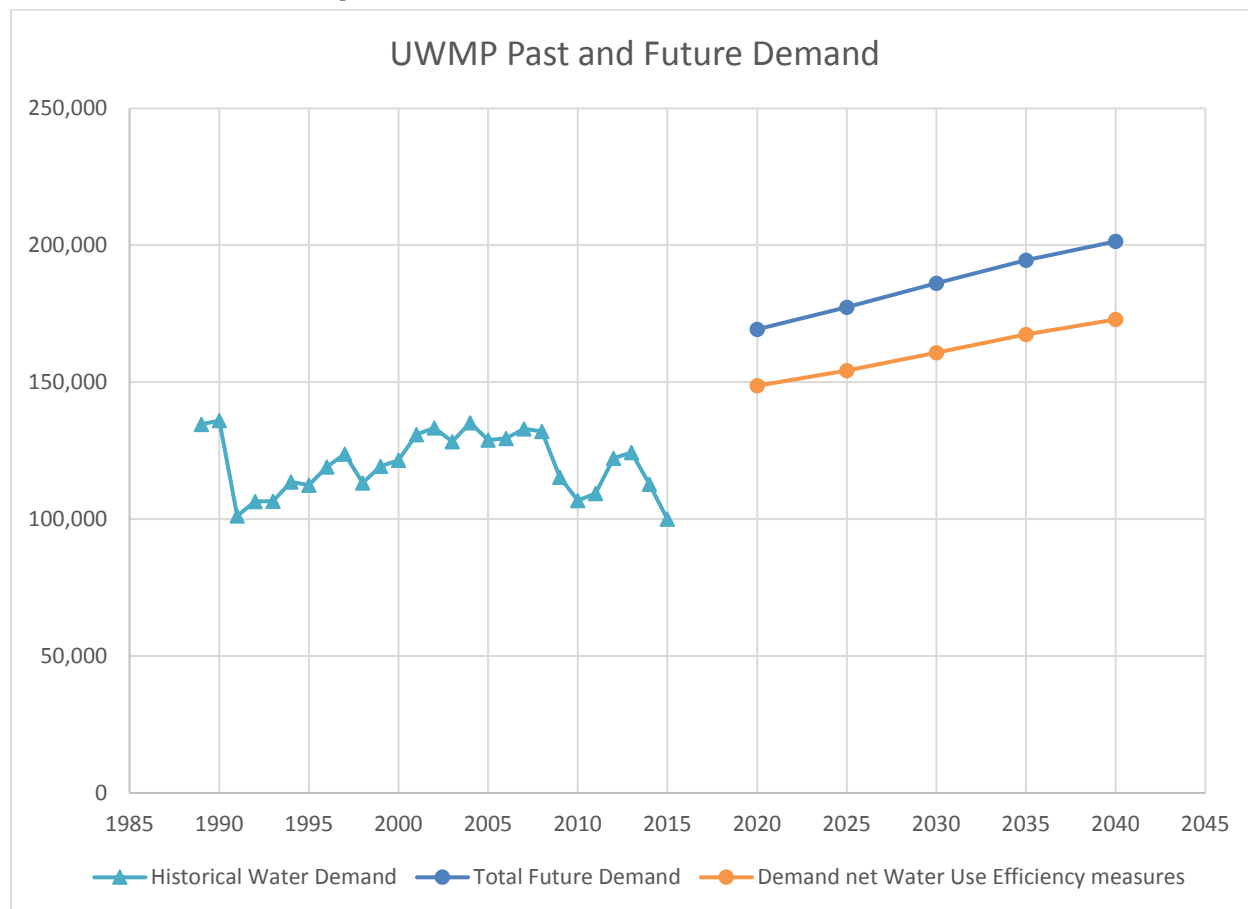
(d) Future projections of industrial water use is based on maximum historical use for industries that are anticipated to continue operating in a similar manner.

(e) Untreated Water System Losses include conveyance losses and Mallard, Contra Loma, Martinez, and Los Vaqueros Reservoir evaporative losses.

(f) CCWD wheels water on behalf of the City of Brentwood that is delivered to the portion of Brentwood outside of CCWD's service area.

Figure 1-2 shows the District’s total historical water demands as well as future demand projections, which are based on maximum dry-year demand not impacted by drought-related water shortage or economic conditions. As shown, water use efficiency measures play a key role in reducing future water demand and, therefore, reduce the need for additional supplies. The District will meet future demands through continued reliance on its Central Valley Project (CVP) contract and balanced investments in conservation, recycled water, and water transfers.

Figure 1-2: UWMP Past and Future Demand



1.3. Current and Planned Supplies

CWC Section 10631 requires CCWD to quantify in its UWMP the existing and planned sources of water available in five-year increments over the next 25 years, and their reliability in average, single-dry, and multiple-dry water year conditions. DWR’s Guidebook defines an average water year as a year that most closely represents the average water supply available to the agency. A single-dry year is defined as the year that represents the lowest water supply available to the agency. A multiple-dry year period is defined as the period that represents the lowest average water supply availability to the agency for a consecutive multiple year period, which DWR has interpreted to mean three dry years.

Table 1-4 summarizes CCWD’s current and planned supplies through 2040, and their availability during average, single-dry, and multiple-dry water year types. Information on supply is discussed in more detail in Chapter 6 of the UWMP.

Table 1-4: Projected Water Supply (AFY)

Water Year Type (a,b)	CVP	Industrial Diver- sions	Mallard Slough (c)	Antioch Diver- sions ^(d)	Ground- water ^(e)	ECCID Supply	LV Supply ^(f)	Re- cycled Water ^(g)	Planned Pur- chases	Total UWMP Planned Supply	Conser- vation ^(h)
Near-Term											
Average	170,000	3,400	1,700	6,400	6,500	6,500	10,000	9,200	-	213,700	1,500
Single-Dry	127,500	0	0	0	0	10,500	20,000	9,200	-	167,200	1,500
Multi-Dry Year 1	144,500	0	0	0	0	10,500	13,000	9,200	-	177,200	1,500
Multi-Dry Year 2	119,000	0	0	0	0	10,500	13,000	9,200	-	151,700	1,500
Multi-Dry Year 3	102,000	0	0	0	0	10,500	13,000	9,200	-	134,700	1,500
2020											
Average	179,000	3,400	1,700	6,400	6,500	6,800	10,000	15,000	-	228,800	5,600
Single-Dry	134,250	0	0	0	0	10,800	20,000	15,000	-	180,100	5,600
Multi-Dry Year 1	152,150	0	0	0	0	10,800	13,000	15,000	-	191,000	5,600
Multi-Dry Year 2	125,300	0	0	0	0	10,800	13,000	15,000	-	164,100	5,600
Multi-Dry Year 3	107,400	0	0	0	0	10,800	13,000	15,000	-	146,200	5,600

Table 1-4: Projected Water Supply (AFY)

Water Year Type (a,b)	CVP	Indus- trial Diver- sions	Mallard Slough (c)	Antioch Diver- sions ^(d)	Ground- water ^(e)	ECCID Supply	LV Supply ^(f)	Re- cycled Water ^(g)	Planned Pur- chases	Total UWMP Planned Supply	Conser- vation ^(h)
2025											
Average	186,300	3,400	1,700	6,400	6,800	7,100	10,000	16,000	-	237,700	7,000
Single-Dry	139,725	0	0	0	0	11,100	20,000	16,000	-	186,800	7,000
Multi-Dry Year 1	158,355	0	0	0	0	11,100	13,000	16,000	-	198,500	7,000
Multi-Dry Year 2	130,410	0	0	0	0	11,100	13,000	16,000	-	170,500	7,000
Multi-Dry Year 3	111,780	0	0	0	0	11,100	13,000	16,000	-	151,900	7,000
2030											
Average	194,200	3,400	1,700	6,400	7,000	7,400	10,000	16,900	-	247,000	8,500
Single-Dry	145,650	0	0	0	0	11,400	20,000	16,900	-	194,000	8,500
Multi-Dry Year 1	165,070	0	0	0	0	11,400	13,000	16,900	-	206,400	8,500
Multi-Dry Year 2	135,940	0	0	0	0	11,400	13,000	16,900	-	177,200	8,500
Multi-Dry Year 3	116,520	0	0	0	0	11,400	13,000	16,900	-	157,800	8,500

Table 1-4: Projected Water Supply (AFY)

Water Year Type ^(a)	CVP ^(b)	Industrial Diversions ^(c)	Mallard Slough ^(c)	Antioch Diversions ^(c)	Ground-water ^(d)	ECCID Supply	LV Supply ^(e)	Re-cycled Water ^(f)	Planned Purchases	Total UWMP Planned Supply	Conservation ^(g)
2035											
Average	195,000	3,400	1,700	6,400	7,300	7,700	10,000	17,700	-	249,200	9,600
Single-Dry	146,250	0	0	0	0	11,700	20,000	17,700	-	195,700	9,600
Multi-Dry Year 1	165,750	0	0	0	0	11,700	13,000	17,700	-	208,200	9,600
Multi-Dry Year 2	136,500	0	0	0	0	11,700	13,000	17,700	-	178,900	9,600
Multi-Dry Year 3	117,000	0	0	0	0	11,700	13,000	17,700	-	159,400	9,600
2040											
Average	195,000	3,400	1,700	6,400	7,600	7,900	10,000	17,800	-	249,800	10,700
Single-Dry	146,250	0	0	0	0	11,900	20,000	17,800	-	196,000	10,700
Multi-Dry Year 1	165,750	0	0	0	0	11,900	13,000	17,800	-	208,500	10,700
Multi-Dry Year 2	136,500	0	0	0	0	11,900	13,000	17,800	-	179,200	10,700
Multi-Dry Year 3	117,000	0	0	0	0	11,900	13,000	17,800	1,700	159,700	10,700

Table 1-4: Projected Water Supply (AFY)

NOTES:

- (a) Basis of water year supply data is as follows: Average (Normal) represents 2004 conditions. Single-Dry Year represents 1977 conditions. Multiple-Dry Year sequence represents a three-year drought such as 1990-1992 conditions.
- (b) The CVP conditions used for supply planning are defined as follows: Average (Normal) is Adjusted Historical Use per CVP M&I Water Shortage Policy. Single-Dry Year supply is 75% of Historical Use. Multi-Dry Year 1, Year 2, and Year 3 is 85%, 70%, and 60%, of Historical Use, respectively.
- (c) Industrial River diversions, Mallard Slough, and Antioch River diversions are based on average annual diversion over ten-year period (2000-2010).
- (d) Groundwater represents production from municipal customer owned wells and an estimate of private wells within CCWD's service area.
- (e) Water supply reliability benefit resulting from expansion of Los Vaqueros Reservoir is based on modeling performed for the project's Environmental Impact Report.
- (f) Per DWR UWMP guidebook, recycled water does not include CCCSD plant use.
- (g) Demand projections shown in Chapter 4 of the UWMP have been adjusted to reflect anticipated reductions due to passive and active conservation savings. Conservation is an integral part of CCWD's water supply portfolio and anticipated future passive and active conservation savings are included in this table for informational purposes. The values reflect anticipated savings going forward from 2015, and do not reflect conservation savings from past programs that have been implemented since the early 1990's.

1.4. Water Supply Reliability Assessment

CWC Section 10631(c) requires that the UWMP includes an analysis of water supply reliability for average, single-dry, and multiple-dry water year types. CCWD's water supply reliability analysis is summarized in **Table 1-5**, which provides a comparison of CCWD's available supply with projected demands, net of conservation savings. In other words, available supply does not include conservation savings as a supply source; future demands have been reduced to account for anticipated conservation savings. The table shows the conditions under which supply deficits are expected to occur over the next 25 years. In order to analyze near-term water supply reliability, the near-term demands are normalized to reflect near-term demand estimates without the effects of the drought-related water shortage and State-mandated conservation requirements.

The District does not anticipate any supply deficits in normal years or single-dry years throughout the planning horizon. This is primarily due to the success of the District's past water use efficiency measures, the existing contract for CVP water, and the long-term water transfer agreement with East Contra Costa Irrigation District (ECCID). In future years, multiple-dry year conditions may result in supply shortfalls of up to approximately 30,000 AF (15 percent of demand). The District's water supply reliability goal is to meet 100 percent of demand in normal years and a minimum of 85 percent of demand during a drought. Any potential supply shortfalls experienced during dry year conditions will be met through a combination of a short-term conservation program or short-term water purchases. Consistent with the District's FWSS, a planned purchase of up to 1,700 AF of additional water supply by 2040 is necessary to meet the water supply reliability goal.

As shown in **Table 1-5** and **Figure 1-4**, CCWD's currently available and planned supplies are sufficient to meet the District's reliability goal and estimated water demands during average, single-dry and multiple-dry year conditions during the next 25 years. The water supply reliability assessment is discussed in Chapter 7 of the UWMP.

Table 1-5: Projected Supply and Demand Comparison (AFY)

Year type	CCWD Demand ^(a)	CCWD Supply	Short-Term Demand Management ^(c)	
			AF	Percent of Demand
Near-Term				
Average	148,000	213,700	0	0%
Single-Dry	148,000	167,200	0	0%
Multi-Dry Year 1	148,000	177,200	0	0%
Multi-Dry Year 2	148,000	151,700	0	0%
Multi-Dry Year 3	148,000	134,700	13,300	9%
2020				
Average	163,700	228,800	0	0%
Single-Dry	163,700	180,100	0	0%
Multi-Dry Year 1	163,700	191,000	0	0%
Multi-Dry Year 2	163,700	164,100	0	0%
Multi-Dry Year 3	163,700	146,200	17,300	11%
2025				
Average	170,400	237,700	0	0%
Single-Dry	170,400	186,800	0	0%
Multi-Dry Year 1	170,400	198,500	0	0%
Multi-Dry Year 2	170,400	170,500	0	0%
Multi-Dry Year 3	170,400	151,900	18,500	11%
2030				
Average	177,600	247,000	0	0%
Single-Dry	177,600	194,000	0	0%
Multi-Dry Year 1	177,600	206,400	0	0%
Multi-Dry Year 2	177,600	177,200	400	0%
Multi-Dry Year 3	177,600	157,800	19,800	11%
2035				
Average	185,000	249,200	0	0%
Single-Dry	185,000	195,700	0	0%
Multi-Dry Year 1	185,000	208,200	0	0%
Multi-Dry Year 2	185,000	178,900	6,100	3%
Multi-Dry Year 3	185,000	159,400	25,600	14%
2040				
Average	191,000	249,800	0	0%
Single-Dry	191,000	196,000	0	0%
Multi-Dry Year 1	191,000	208,500	0	0%
Multi-Dry Year 2	191,000	179,200	11,800	6%
Multi-Dry Year 3 ^(b)	191,000	161,500	29,600	15%

Table 1-5: Projected Supply and Demand Comparison (AFY)

NOTES:

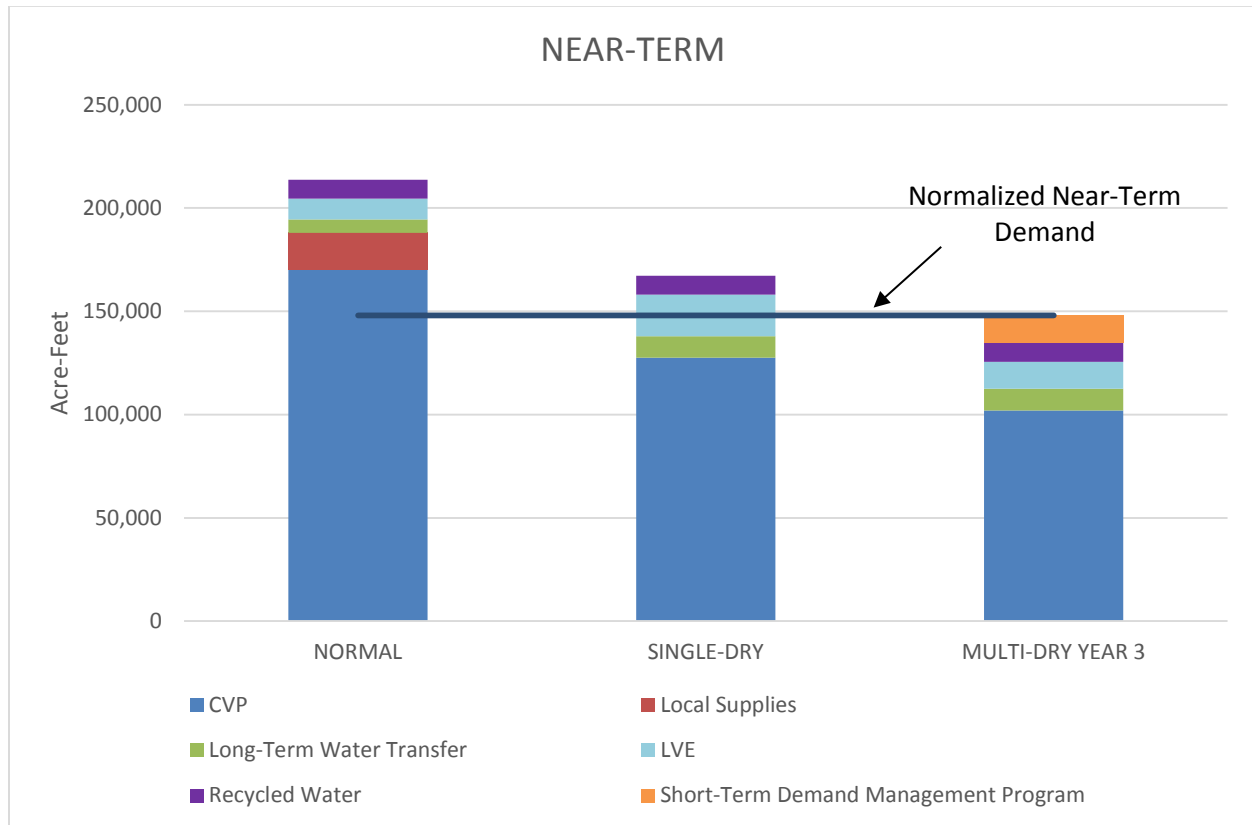
(a) CCWD demand and available supply is net of conservation savings. Near-term demands are normalized to reflect near-term demand estimates without the impacts of drought-related water shortage and State-mandated conservation requirements.

(b) CCWD supply in the third year of a multiple-dry year period in 2040 includes a planned purchase of 1,700 AF, consistent with the District's Future Water Supply Study.

(c) The District's Board-adopted water supply reliability goal is to meet a minimum of 85 percent of demand during drought conditions and 100 percent of demand in normal years. The remaining 15 percent would be met by a combination of short-term water purchases and short-term demand management programs.

Figure 1-3 and **Figure 1-4** illustrate the near-term and 2040 supply portfolio relative to demand in an average year, single-dry year, and the third year of a multiple-dry year period. The near-term demand is normalized to reflect near-term demand estimates without drought-related water shortage or economic impacts on water use. The portfolio is net of conservation savings, and assumes the District will continue to invest in long-term conservation programs as part of its strategy to prolong its water supply reliability and delay the need for additional supplies.

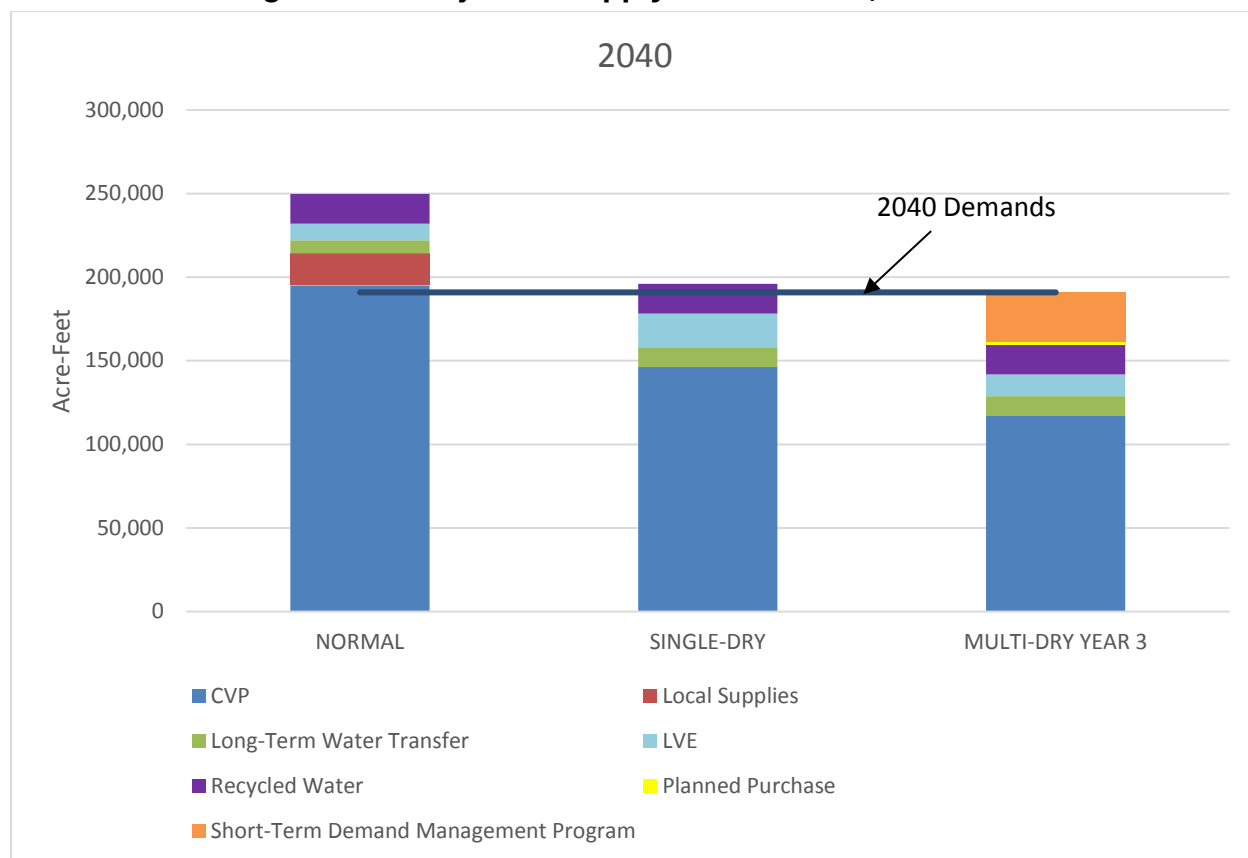
Figure 1-3 : Projected Supply and Demand, Near-Term



NOTES:

1. Near-term demands have been normalized to reflect what the near-term maximum dry year demands would be without drought-related water shortage or economic impacts.
2. Supplies and demands are net of conservation savings.

Figure 1-4: Projected Supply and Demand, Year 2040

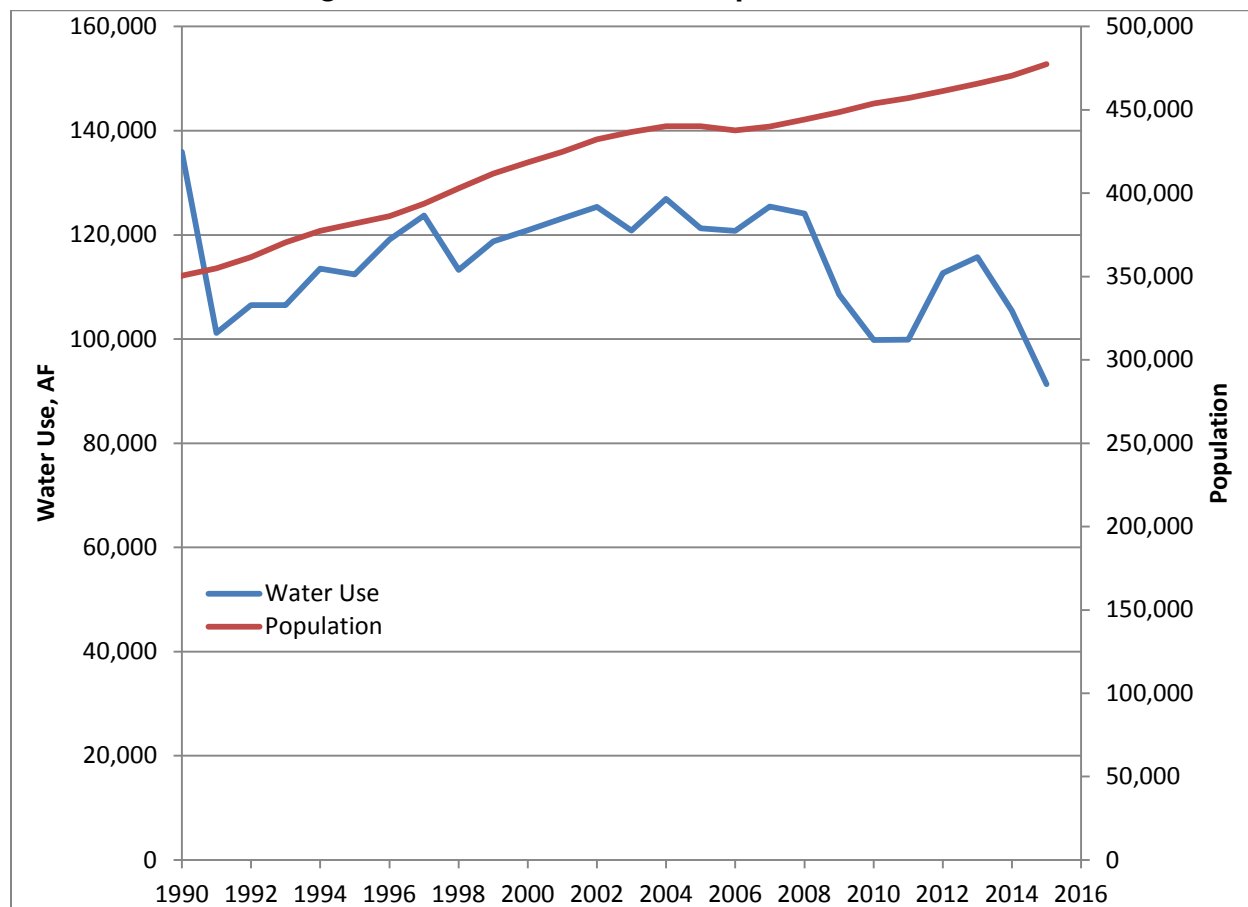


1.5. Water Demand Management Measures

The UWMP describes CCWD’s current water demand management measures (DMMs). Water conservation has been an integral part of CCWD’s water management strategy for more than two decades. Conservation has significantly lowered current water use levels and will reduce the need for future supplies. CCWD has successfully developed, implemented, and maintained an effective water conservation program since 1988 as demonstrated by the fact that CCWD serves less water today than during the early 1990s, despite a 40 percent increase in population (**Figure 1-5**). In 2015, due to ongoing drought conditions, CCWD’s federal water (CVP) allocation was significantly reduced and the State implemented mandatory urban water conservation requirements to achieve a statewide goal of 25 percent reduction in water use. In response, CCWD implemented its 2015 Drought Management Program that included specific water use prohibitions and temporary conservation pricing. To ensure the program’s success, an extensive educational campaign with free services for the public was included. The resulting customer response was overwhelmingly positive and water consumption was reduced by a cumulative 34 percent compared to the State’s established baseline year of 2013. CCWD will continue to work closely with its customers to encourage them to conserve water, eliminate water waste, and generally adapt to the possibility of drier years ahead. CCWD is also partnering with local industries in the service area to identify and implement projects to accomplish a combined objective of water, energy, and wastewater reduction for sustainability. The benefits of demand management strategies are cost

and waste reduction, greenhouse gas emission reduction, and water savings. CCWD will continue to look for new, cost-effective technologies, refine and improve existing conservation programs, and evaluate regional opportunities to implement conservation projects.

Figure 1-5: Water Use and Population Growth



Through sustained investment in the Water Conservation Program coupled with governmental codes regulating the water use of toilets, showerheads, and other plumbing fixtures as well as private sector conservation efforts, CCWD has been able to reduce its water demand by roughly 10 percent since the early 1990's. Over the 24-year period of 1992-2015, CCWD estimates the Water Conservation Program and governmental codes have cumulatively saved more than 150,000 AF of water.

The District currently offers a wide range of conservation programs and services to its customers. Programs are implemented throughout the District's retail and wholesale service areas. The programs and services fall into three main categories including: Conservation Surveys, Rebate Incentives, and Education & Outreach. Within these broad categories, the programs and services are further tailored for residential, commercial, industrial, and large landscape water uses. CCWD continually evaluates its existing and potential conservation programs and services to determine the best combination of programs that meet criteria such as water savings potential, certainty of water savings, customer receptivity, market potential, and cost-effectiveness. The result is a

balanced portfolio of programs and services with a high degree of certainty in water savings at a reasonable cost.

Figure 1-6 provides a summary of CCWD’s water conservation programs and services, which is consistent with the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) developed by the California Urban Water Conservation Council (CUWCC) and signed by CCWD in 1991. Current annual savings are estimated to be approximately 6,200 AFY. Cumulative savings from the District’s program exceed 73,000 AF, which is the sum of each annual year’s savings from the inception of the program. CCWD’s water conservation program is discussed in more detail in Chapter 9 and Appendix D.

Figure 1-6: Existing and New/Updated Conservation Programs as of 2015

Continue to Offer	New/ Updated Programs & Pilots
Residential - Conservation Surveys - Water Saving Devices (showerheads, aerators, timers, nozzles) - Rebates for Smart Irrigation Timers Non Residential - Conservation Surveys - Large Landscape Surveys - Landscape Water Budgets - Rebates for - Urinals - Commercial Clothes Washers - Commercial Kitchen Pre-Rinse Spray Valves - Cooling Towers - Smart Irrigation Timers - Drip Irrigation - Sprinkler Nozzles Education & Outreach - Fallback Irrigation Notifications - Garden Tours, Workshops, and Trainings - Garden Database & Publications - School Presentations - Presentations to commercial, residential, schools, and others	Residential - Home Water Reports (single family only) - Lawn to Garden Rebates - Energy Star Most Efficient Clothes Washer Rebates Non Residential - Heavy Industry Conservation Surveys - Enhanced Water Budgets - Lawn to Garden Rebates

1.6. Recycled Water Opportunities

Water recycling is a component of CCWD’s long-term sustainable water supply strategy and CCWD collaborates with local wastewater agencies proposing to provide recycled water for appropriate designated uses. Recycled water is reflected as a demand and a water supply source in the 2015 UWMP. Section 6.5 of the UWMP provides detailed information on current recycled

water use in the District's service area, potential recycled water sources and projects, and projected use of recycled water within the District's service area over the next 25 years.

Since 1988, CCWD has completed and participated in a number of studies, demonstration projects, pilot testing programs and business plans to verify the feasibility of using recycled water within the CCWD service area. CCWD has existing agreements with Central Contra Costa Sanitary District (CCCSD) and Delta Diablo Sanitation District (DDSD) regarding specific projects that provide recycled water supplies for industrial uses and landscape irrigation.

In 1995, CCCSD and CCWD entered an agreement where CCCSD purveys recycled water to areas in Concord, Pleasant Hill, and Martinez. Sixty-one customers were identified in the agreement as potential recycled water users with a total potential recycled water demand of approximately 1,600 AFY. In 2000, DDSD and CCWD entered an agreement for DDSD to purvey approximately 8,600 AFY of tertiary treated recycled water to the Delta Energy Center and the Los Medanos Energy Center, which came on line in 2002. This project is one of the largest industrial recycled water projects in the State of California. In 2004, DDSD and CCWD entered another agreement where development of recycled water facilities will provide up to 1,654 AFY to areas in Pittsburg and Antioch for urban landscape and golf course irrigation uses.

Currently, approximately 10,000 AFY of recycled water is being put to beneficial use within the District's service area, including wildlife habitat enhancement and wetlands. Future use is anticipated to grow to nearly 18,000 AFY through additional projects implemented under the current agreements, potential future industrial use, and development of the Concord Naval Weapons Station (CNWS). The City of Concord Community Reuse Plan proposes to develop approximately 5,000 acres of the CNWS, which is located within the District's treated water service area. The District worked with the City to incorporate significant water conservation measures and recycled water standards in its Reuse Plan. These standards have reduced the project's potable water demand projections by more than 50 percent. It is estimated that the project will utilize recycled water in an amount equal to or greater than the net potable water demand. The District is also evaluating a project to deliver recycled water to major industrial customers for use in their cooling towers.

Actual and projected use of recycled water is summarized in **Table 1-6** below. A more detailed discussion of recycled water use within CCWD's service area is provided in Chapter 6 of the UWMP.

Table 1-6: Actual and Projected Future Use of Recycled Water (AFY)

Recycled Water Use	2015 Actual	2020	2025	2030	2035	2040
Irrigation ^(a)	1,310	1,760	2,020	2,090	2,190	2,280
Industrial ^(b)	6,620	11,400	11,400	11,400	11,400	11,400
Wildlife and Wetland Habitat ^(c)	1,330	1,330	1,340	1,340	1,340	1,340
Concord Naval Weapons Station ^(d)	0	500	1,300	2,100	2,800	2,800
TOTAL	9,200	15,000	16,100	16,900	17,700	17,800

NOTES:

(a) Includes current and planned projects under CCCSD/CCWD Zone 1 Project Agreement and DDSD/CCWD General Agreement. Also includes 2015 recycled water provided at fill stations by wastewater agencies.

(b) Includes Delta Energy Center and Los Medanos Energy Center (DEC/LMEC) power plants and potential future industrial recycled water projects for cooling tower use.

(c) Includes Mt. View Sanitary District wildlife and wetland habitat.

(d) Based on City of Concord Community Reuse Plan Environmental Impact Report, January 2010.

1.7. Senate Bill X7-7

SB X7-7 requires the District to provide an updated 20x2020 evaluation in the 2015 UWMP, including updated baseline per capita water use, interim water use target (2015), and 2020 water use target using the methodologies described in DWR's February 2011 Methodologies Guidance (2011 Methodologies). The 2015 UWMP also requires that the District use standardized verification forms developed by DWR to demonstrate that it is meeting the interim 2015 water use target.

The District's 20x2020 analysis for its retail treated water service area is provided in Chapter 5 of the UWMP. For the District's retail treated water service area, the baseline per capita consumption is 185 gallons per capita per day (gpcd), which was determined based on a 10-year period of 1999-2008. The District's interim 2015 target is 167 gpcd and 2020 target is 148 gpcd. Due to the success of the District's ongoing water use efficiency programs and the 2015 Drought Management Program, the District's actual 2015 per capita consumption for its retail treated water service area was 114 gpcd, which is well below the interim 2015 target as well as the 2020 target. Per capita consumption is anticipated to increase in the coming years as a result of drought rebound and improving economic conditions. The District has a flexible plan to ensure it meets its 2020 target, including continuing to implement its conservation program to reduce long-term water demand in conformance with the District's FWSS and the requirements of SB X7-7 and evaluating recycled water projects to serve major industrial customers.

A regional approach to meeting the SB X7-7 requirements is included as Appendix B in the UWMP. The regional evaluation offers the District and its municipal customers an additional way to comply with the requirements. The Regional Alliance includes CCWD's retail service area and its wholesale municipal customers (Cities of Antioch, Pittsburg, and Martinez, Golden State Water Company, and Diablo Water District). Each agency will meet the requirements of SB X7-7 if it achieves the reductions on its own, or if the region meets the requirement as a whole. For the District's total service area, the baseline per capita consumption is 263 gpcd, with a preliminary interim target of 236 gpcd and a 2020 target of 210 gpcd. The actual 2015 per capita consumption for the Regional Alliance was 171 gpcd, thus the Regional Alliance has also met its interim 2015 target and is on track to meeting its 2020 target.

The additional reduction in per capita water use to meet the individual and/or Regional Alliance 2020 targets will depend heavily on rebound in customer water use following the drought. The District has a flexible plan to achieve an additional 5 to 10 percent reduction in per capita beyond its existing conservation program, if needed, to meet the 2020 water use target. A more detailed discussion on the SB X7-7 evaluation and compliance is provided in Chapter 5 and Appendix E of the UWMP.

1.8. Water Shortage Contingency Plan

The UWMP includes a water shortage contingency plan as required by CWC Section 10632(a), which provides options for managing the water supply and demand balance during water supply shortage conditions. These options have been developed based on the District's previous experience with short-term demand management, most recently with the 2015 Drought Management Program, and in consideration of long-term conservation goals.

The updated Water Shortage Contingency Plan presented in Chapter 8 of the UWMP sets four stages of demand reduction goals linked to the availability of supplies to the District. The total demand reduction goal for each stage ranges from less than 10 percent at Stage I to up to 50 percent at Stage IV. Stages I and II typically involve voluntary customer demand reduction measures and Stages III and IV typically impose mandatory measures such as water use prohibitions and temporary conservation pricing. **Table 1-7** summarizes the four stages of the demand reduction targets.

Table 1-7: Demand Reduction Stages and Goals			
Stage	Description	Percent of Total Supply Available	Percent Overall Demand Reduction
I	Water Alert	90%	Up to 10%
II	Water Warning	80-90%	10 - 20%
III	Water Emergency	60-80%	20 - 40%
IV	Water Crisis	50-60%	40 - 50%

In January 2014, the California Governor formally declared a condition of statewide drought related emergency conditions, and in April 2014 by Executive Order, the Governor directed the

SWRCB to develop emergency regulations to mandate urban water use reduction from residents and water suppliers. In response, CCWD implemented a voluntary drought management program in April 2014, which achieved a 15 percent reduction in water use compared to the SWRCB-established baseline year of 2013. In March 2015, in light of California entering a fourth year of drought conditions, the SWRCB reauthorized the emergency regulations and approved additional mandates requiring water suppliers to take further actions in water use reductions. In response, CCWD implemented a 2015 Drought Management Program (2015 DMP) in June 2015 that included specific water use prohibitions and temporary conservation pricing. The 2015 DMP achieved a cumulative 30 percent reduction in water use compared to 2013. For reference, Ordinance 15-01 establishing the 2015 DMP is included in Appendix F. The Water Shortage Contingency Plan is discussed in more detail in Chapter 8 of the UWMP.

1.9. Report Contents

Beginning with the 2015 UWMP, urban water suppliers are required to submit the UWMP electronically through DWR's database, using standardized forms and tables developed by DWR. Thus, CCWD's UWMP report format, tables, and organization have changed since the 2010 UWMP to be consistent with DWR's 2015 UWMP Guidebook. Where relevant, the applicable statement of law appears first, followed by detailed information demonstrating compliance with the law.

Some of the information requested by DWR is contained in existing documents, which are included in the report appendices. The documents include relevant sections of the District Code of Regulations and applicable Board Resolutions. Additional appendices include the Regional Alliance 20x2020 Report, DWR's checklist of UWMP requirements, relevant text of the California Urban Water Management Planning Act and SB X7-7, the CUWCC Annual Reports for FY13 and FY14, public notices, and notifications sent to cities, counties, and municipalities within the CCWD service area.

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2. Plan Preparation

All elements required by the Urban Water Management Planning Act that are applicable to Contra Costa Water District (CCWD) have been addressed in this report. Table F-1 from the Department of Water Resources (DWR) Guidebook to Assist Urban Water Suppliers to prepare a 2015 Urban Water Management Plan (Guidebook) is an Urban Water Management Plan (UWMP) checklist, organized by legislation number. This table is provided in Appendix A and references the section numbers of this UWMP where the required information can be located.

2.1 Basis for Preparing a Plan

CWC 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 AF 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.

CWC 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.

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

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

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

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

CWC 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.

CWC 10631

(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).

The Urban Water Management Planning Act (UWMP Act) was created by Assembly Bill (AB) 797, which was signed into law in September 1983. Since then the Act has been amended by AB 2661 (July 1990), AB 1869 (October 1991), and AB 11X (October 1991). Since the 2010 UWMPs were submitted, AB 2067, Senate Bill (SB) 1420, and SB 1036 were passed, which further amended reporting requirements associated with the Urban Water Management Planning Act.

The Urban Water Management Planning Act requires that urban water suppliers prepare and adopt UWMPs which report, describe, and evaluate water deliveries and uses, water supply sources, efficient water uses, and demand management measures (DMMs). These plans have to be prepared every five years and are due following years ending in 0 and 5. Section 10617 of the UWMP Act defines an urban water supplier as any municipal water supplier that provides water for municipal purposes to more than 3,000 customers or supplying more than 3,000 AF of water annually, which includes CCWD. The Urban Water Management Planning Act also directs water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future demands. Urban water suppliers are required to assess current demands and supplies over a 20-year planning horizon and consider various drought scenarios. Water shortage contingency planning and drought response actions are also to be included in a UWMP.

In November 2009, the Water Conservation Bill of 2009 (SB X7-7) was passed. This bill includes elements of the 20x2020 Water Conservation Plan which was designed to reduce the statewide per capita urban water use by 20 percent by the year 2020. The Water Conservation Bill of 2009 requires urban water suppliers to report in their UWMPs base daily per capita water use (baseline), an urban water use target, an interim urban water use target, and compliance daily per capita water use. This will enable water agencies, and in turn, the State of California, to track progress towards decreasing daily per capita urban water use throughout the state. Beginning in 2016, retail water suppliers are required to comply with the conservation requirements in SBX 7-7 in order to be eligible for State water grants and loans.

The Contra Costa Water District (CCWD or District) is an urban water supplier that owns and operates a public water system, as defined in the California Water Code. **Table 2-1** below provides information on the District's public water system.

Table 2-1: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015 (AF)
CA-0710003	Contra Costa Water District - Retail Water System	61,260	24,900
TOTAL		61,260	24,900
NOTES: (a) This table provides information on CCWD's retail treated water system. CCWD also provides wholesale water service to the City of Antioch, Diablo Water District, City of Martinez, City of Pittsburg, City of Brentwood, and the Golden State Water Company.			

2.2 Regional Planning

Regional planning can deliver mutually beneficial solutions to all agencies involved by potentially reducing costs for an individual agency, assessing water resources at the appropriate geographic scale, or allowing for solutions that cross jurisdictional boundaries. CCWD and its wholesale municipal customers have opted to submit individual Urban Water Management Plans, but have coordinated on a Regional Alliance approach to meeting the SB X7-7 targets. A Regional Alliance is a group of water suppliers agreeing among themselves to plan, comply, and report as a region on the requirements of SB X7-7. CCWD's Regional Alliance includes its retail service area and its wholesale municipal customers (Cities of Antioch, Pittsburg, Martinez, Golden State Water Company, and Diablo Water District). A Regional Alliance Report is provided in Appendix B of this report.

2.3 Individual or Regional Planning and Compliance

The District has opted to develop this UWMP as an individual agency, as shown in **Table 2-2**. As such, the Plan covers the District's service area and addresses all the relevant requirements of the California Water Code (CWC).

Table 2-2: Plan Identification

Select Only One	Type of Plan		Name of RUWMP or Regional Alliance
☒	Individual UWMP		
	☐	Water Supplier is also a member of a RUWMP	
	☒	Water Supplier is also a member of a Regional Alliance	Contra Costa Water District Alliance
☐	Regional UWMP (RUWMP)		

2.4 Fiscal or Calendar Year and Units of Measure

CCWD is both a retail and wholesale agency, supplying water directly to customers as well as providing water to wholesale customers. As such, the District is required to include all wholesale and retail tables, as outlined in the DWR 2015 UWMP Guidebook. All UWMP tables are in calendar year, and all units of measure used are in AF as indicated in **Table 2-3** below. Because the UWMP is structured in calendar year, water use and planning data for the entire calendar year of 2015 is used.

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 (FY)
Units of Measure Used in UWMP	
Unit	AF

2.5 Coordination and Outreach

The following sections summarize the coordination and outreach conducted by CCWD during preparation of its 2015 UWMP.

2.5.1. Wholesale and Retail Coordination

CCWD, operating as a wholesale agency, sent a letter to its municipal customers on February 16, 2016 as indicated in **Table 2-4W**. Copies of this letter are included in Appendix C. The information provided summarized CCWD's supply reliability assessment for CCWD's municipal customers to consider and use in preparation of their own UWMPs. CCWD's projected water supply reliability was provided in increments of five years through 2040 for average, single, and multiple-dry years. The letter also included a discussion of SB X7-7 requirements and CCWD's Regional Alliance analysis that was being prepared on behalf of its municipal customers. Shortly after the letter was sent, CCWD held a meeting with its municipal customers in November 2015 to discuss UWMP preparation.

For the purposes of UWMP reporting and consistency of accounting and data analyses, CCWD's retail area is considered a customer of its wholesale area, as noted in **Table 2-4R**. Thus, as a retail agency, CCWD relies upon the same water supply reliability information as was provided to CCWD's wholesale municipal customers.

Table 2-4W: Water Supplier Information Exchange

☐	Supplier has informed more than 10 other water suppliers of water supplies available in accordance with CW 10631. Do not complete the table below. Include a list of the water suppliers that were informed. Location of this list in the UWMP _____.
☒	Supplier has informed 10 or fewer other water suppliers of water supplies available in accordance with CW 10631. Complete the table below.
Water Supplier Name	
City of Antioch	
City of Brentwood	
City of Martinez	
City of Pittsburg	
Diablo Water District	
Golden State Water Company	
CCWD (District Retail)	
NOTES: (a) For the purposes of data consistency, CCWD's retail area is considered a customer of its wholesale area. Thus, as a retail agency, CCWD relies upon the same water supply reliability information as was provided to CCWD's wholesale municipal customers.	

Table 2-4R: Water Supplier Information Exchange

The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.

Water Supplier Name

CCWD Wholesale Service Area

NOTES:

(a) For the purposes of data consistency, CCWD's retail area is considered a customer of its wholesale area. Thus, as a retail agency, CCWD relies upon the same water supply reliability information as was provided to CCWD's wholesale municipal customers.

2.5.2. Coordination with Other Agencies and the Community

Throughout the UWMP preparation, CCWD met and consulted with municipal customers when contacted for assistance. In addition to coordinating with its wholesale customers, the District also coordinated with local wastewater agencies, who were invited to comment on an administrative draft of the sections pertaining to recycled water. Copies of the UWMP were distributed to communities, cities, and other agencies within CCWD's service area prior to adoption by the Board of Directors.

Additionally, in an effort to maximize its water resources and minimize its need for additional supplies, CCWD is collaborating with several San Francisco Bay Area (Bay Area) agencies on an Integrated Regional Water Management Plan (IRWMP) and the Bay Area Regional Reliability (BARR) project. CCWD's regional coordination and outreach efforts are discussed further in Chapter 10.

2.5.3. Notice to Cities and Counties

California Water Code Section 10621(b) stipulates that a water supplier must notify any city or county within which the supplier provides water that it is reviewing and considering changes to the UWMP. This notification must occur at least 60 days before the public hearing. CCWD held the public hearing for the UWMP on June 1, 2016. Notifications were sent out on October 12, 2015, well in advance of the 60 day requirement. Copies of this notification are included in Appendix C.

3. System Description

The following sections provide an overview of the District, including history, current service area, and major water related infrastructure maintained by the District. Service area climate and population and demographic information is also provided in this section.

CWC Section 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.

3.1. General Description

The District obtains its water supply exclusively from the Sacramento-San Joaquin Delta (Delta) and serves treated and raw (untreated) water to approximately 500,000 people in north, central, and east Contra Costa County (County). In performing this service, the District operates and maintains a complex system of water transmission, treatment, and storage facilities to supply both treated and untreated water to its customers.

The Contra Costa County Water District was approved by the voters in 1936 as the legal entity to contract, purchase, and distribute water provided by the United States Bureau of Reclamation (Reclamation) through the Contra Costa Canal (Canal). (In 1981, "County" was dropped from the name, leaving Contra Costa Water District.) The 48-mile Canal conveys water from the Delta, through Rock Slough, Old River, and Middle River via the Victoria Canal, to eastern and central Contra Costa County. For the first 25 years of its existence, the District's main responsibility was the purchase and distribution of untreated water through the Canal. The cities and other water utilities within the District were responsible for treating water used by their customers. However, in the late 1950s, many citizens and public officials became concerned about the quality and cost of the water in the central county area. To address this problem, the District purchased the California Water Service Company's Concord-area treatment, pumping, storage, and distribution facilities. In 1968, the District replaced the old treatment facilities with the construction of its own Ralph D. Bollman Water Treatment Plant (Bollman WTP) in Concord. The Bollman WTP and the Randall-Bold Water Treatment Plant (RBWTP), built in 1992, now provide retail treated water to approximately 200,000 people in the central county area and by contract to wholesale municipal customers. The RBWTP in Oakley is jointly owned with Diablo Water District (DWD). The Multi-Purpose Pipeline (MPP), constructed in 2003, is a 21-mile long pipeline that transports treated water to new customers in central Contra Costa County from the RBWTP and to wholesale municipal customers.

In 2004, CCWD entered into an agreement to treat water for a major new customer, the City of Brentwood. Under the agreement, CCWD constructed and is operating a 16.5 million gallons per day (mgd) treatment plant adjacent to RBWTP. The City of Brentwood Water Treatment Plant (WTP) serves customers in the portion of the City that is outside CCWD's service area boundary.

While the District started out primarily serving untreated water for irrigation and industry, it is now one of the largest urban water districts in California. Its customers include six municipal agencies, major industrial customers, irrigation customers, and over 61,000 retail treated water customers consisting primarily of residential and commercial uses. CCWD's large industrial base includes oil refineries, steel mills, and chemical manufacturing facilities. Historically, large industrial customers have accounted for approximately one-third of total water use within CCWD.

3.2. Service Area Boundary Map

The District's current total service area (or boundary) encompasses most of central and northeastern Contra Costa County, a total area of more than 140,000 acres, including the Los Vaqueros watershed area of approximately 19,100 acres. Water is provided to a combination of municipal, residential, commercial, industrial, and landscape irrigation customers. Major untreated water municipal customers include DWD and the cities of Antioch, Pittsburg, and Martinez. Treated water is distributed to individual retail customers living in the following communities in CCWD's treated water service area (TWSA): Clayton, Clyde, Concord, Pacheco, Port Costa, and parts of Martinez, Pleasant Hill, and Walnut Creek. In addition, CCWD treats and delivers water wholesale to the City of Brentwood, Golden State Water Company (serving Bay Point), and the City of Antioch. **Figure 3-1** shows the CCWD's total service area boundary, as well as its retail TWSA boundary.

3.2.1. City of Brentwood

CCWD has agreements with the City of Brentwood to meet Brentwood's long-term water needs. The portion of Brentwood within CCWD's service area is served by purchased capacity at the District's RBWTP. In 2008, a separate treatment facility, the City of Brentwood Water Treatment Plant, was constructed adjacent to the RBWTP to serve the portion of Brentwood that is outside of CCWD's service area. The City of Brentwood has its own water supply, which includes local groundwater and surface water delivered under contract from East Contra Costa Irrigation District (ECCID). CCWD pumps, treats, and delivers the ECCID water under contract with the City of Brentwood. The demands for the portion of Brentwood that is outside of CCWD's service area are not included in this UWMP.

3.2.2. Major Water-Related Infrastructure

Key facilities within the District's service area include untreated and treated water facilities. Major infrastructure components are described below and included in **Figure 3-1**.

Figure 3-1: Service Area Boundary



3.2.2.1 Untreated Water Conveyance Facilities

The District conveys untreated water to both retail and wholesale customers. Untreated water is conveyed to retail industrial and irrigation customers as well as to the Bollman and Randall-Bold WTPs for treatment prior to delivery to the District's retail TWSA. Untreated water is also conveyed to wholesale municipal customers, including the cities of Antioch, Martinez, Pittsburg and DWD, which operate their own water treatment plants and treated water distribution systems. (The RBWTP is jointly owned with DWD.) Additionally, CCWD wheels surface water on behalf of the City of Brentwood.

The District's primary conveyance facility for its untreated water supply is the Canal, which carries water from Rock Slough for deliveries throughout CCWD's service area, terminating at Martinez Reservoir. The Canal also has the ability to accept water from the Los Vaqueros Project (described below) and from the Mallard Slough intake. The Canal is approximately 48 miles long with the major deliveries within the first 26 miles, which runs from Rock Slough to the Shortcut Pipeline near the Bollman WTP in Concord. The first 4 miles of the Canal have been historically unlined and run from Rock Slough to Pumping Plant 1. In 2009 CCWD completed Segment 1 of the Canal Replacement Project, enclosing approximately 2,000 feet of the unlined Canal in a pipe extending east from Pumping Plant 1 to Marsh Creek. Segment 2 was completed in 2015 and enclosed an additional 7,000 feet of the unlined canal from Marsh Creek to Sellers Avenue. The Segment 2 project also included construction of a flood isolation structure at the Rock Slough headworks. Subsequent segments will be constructed as funds become available.

Starting at Pumping Plant 1, the remaining Canal reaches are concrete lined with capacities ranging from approximately 22 cubic feet per second (cfs) to 350 cfs. Four pumping plants within the first 7 miles of the Canal lift water 124 feet to flow the remaining length of the main Canal by gravity. The Ygnacio Relift Pump Station diverts water from the main Canal into the 5-mile Ygnacio Loop in the City of Walnut Creek. The Canal has several in-line siphons, culverts, and check structures, as well as a 1.4-mile tunnel. The Shortcut Pipeline conveys untreated water from the Canal to Mallard Reservoir (for the Bollman WTP), Martinez Reservoir (for City of Martinez and Shell Oil Company) as well as some smaller industrial customers.

The original Los Vaqueros Project included a new point of diversion (at Old River south of the Highway 4 crossing) that operates in conjunction with the Rock Slough diversion point and associated water transmission facilities, pumping plants, and other facilities. The pumping plant is at the Old River intake and has an installed capacity of 250 cfs. Diversion from the Old River intake for delivery to CCWD's service area began in the summer of 1997. In 2010, CCWD completed construction of a pumping plant on Victoria Canal near Middle River that also has an installed capacity of 250 cfs.

The two pumping plants are permitted to operate at a combined capacity of 320 cfs. Both the Middle River and Old River pumping plants pump water to the 4-million gallon Transfer Reservoir. From the Transfer Reservoir water can either flow by gravity to the Canal or is pumped up to the Los Vaqueros Reservoir by the Transfer Pump Station. Water stored in the Los Vaqueros Reservoir is conveyed to the Canal by gravity.

The Transfer Pump Station has an installed capacity of 200 cfs. Water supplies conveyed from Rock Slough and the Los Vaqueros Conveyance System (Los Vaqueros Reservoir, Old River Intake, and Middle River Intake) are blended at the Neroly Blending Facility in Antioch.

An untreated water intertie connecting the Los Vaqueros Pipeline with East Bay Municipal Utility District's (EBMUD's) Mokelumne Aqueducts in Brentwood was completed in 2007 and enables the wheeling of a portion of CCWD's Central Valley Project (CVP) water via the Freeport Regional Water Project and the Mokelumne Aqueducts. The intertie also functions as an emergency connection between EBMUD and CCWD, enabling the districts to share water resources in an emergency.

3.2.2.2 Untreated Water Reservoirs

CCWD has four untreated water storage reservoirs: Los Vaqueros, Contra Loma, Mallard, and Martinez.

The original Los Vaqueros Reservoir was completed in 1998 (initial filling was completed in January 1999) with a capacity of 100,000 acre-feet (AF). The reservoir was expanded from 100,000 AF to 160,000 AF in 2012. Los Vaqueros Reservoir is located eight miles south of Brentwood. The reservoir stores higher quality Delta water for blending with the Delta supply during dry periods when salinity levels typically increase. Besides improving water quality for CCWD's customers, the reservoir stores water for emergency supply (minimum 3-month emergency supply) and for operational flexibility to protect fisheries. The reservoir provides a minimum of 70,000 AF of emergency supply in wetter years and 44,000 AF in dry years that could be used during an extreme drought or a catastrophic interruption of CCWD's Delta supplies.

Contra Loma Reservoir is used primarily as a regulating reservoir for peak demands on the Canal and short-term (one to seven days) supplies and for emergency storage. The reservoir has an operating capacity of about 1,200 AF. Mallard Reservoir provides water to Bollman WTP and is used as a storage facility for emergency use, flow regulation, and blending of the different sources of supply. The reservoir has a usable capacity of about 2,100 AF.

Martinez Reservoir is located in Martinez and is at the terminus of the Canal and the Shortcut Pipeline. This water is primarily used by the City of Martinez for its treatment plant and for the Shell Oil Refinery. It also provides regulating storage to capture flows from Canal operations. The Martinez Reservoir has an available capacity of about 230 AF.

3.2.3 Treated Water Facilities

CCWD operates three water treatment plants, as well as treated water storage reservoirs, pump stations, and pipelines that form the distribution system for the TWSA. Testing for water quality and contaminants is conducted in accordance with US Environmental Protection Agency and State Water Resources Control Board regulations.

The District's TWSA is supplied from the Bollman WTP in Concord as well as the RBWTP in Oakley. The Bollman WTP's treatment process includes coagulation, flocculation, sedimentation, filtration, ozonation, and disinfection. The current permitted capacity of the Bollman WTP is

75 mgd. Water is pumped from the plant to eight pressure zone distribution system through approximately 800 miles of pipeline ranging in diameter from 2 to 66 inches.

The RBWTP in Oakley is jointly owned by CCWD and DWD. The DWD portion of the facility delivers treated water to the City of Oakley while the CCWD portion delivers treated water wholesale to the Cities of Brentwood and Antioch, Golden State Water Company (Bay Point), and retail to the TWSA via the MPP. The RBWTP's current permitted capacity is 50 mgd and the treatment process includes a grit basin, influent mixing basin, flocculation, sedimentation, intermediate and post-ozonation, and disinfection.

The City of Brentwood WTP, constructed in 2008, is located adjacent to RBWTP and provides treated water to the portion of Brentwood that is outside of the District's service area.

3.3. Service Area Climate

Monthly precipitation and average daily maximum air temperature estimates for the period 1980 to 2012 were compiled from the DAYMET¹ weather data for various locations within the service area. CCWD's service area generally has hot, dry summers and cool, wet winters. Average monthly temperatures range from the mid-50s to the low 90s (**Figure 3-2**). The rainy season generally lasts from November through April. Average annual precipitation ranges from approximately 17 inches in Brentwood to 22 inches in Martinez (**Figure 3-3**). The differences reflect proximity to the coast. Some areas, such as Martinez, experience a rain shadow effect from the East Bay hills, causing an uneven rainfall distribution with higher annual precipitation in the higher elevation areas in the west.

Figure 3-2: Average Historical Temperature (°F)

	Martinez	Concord	Bay Point	Pittsburg	Antioch	Brentwood	Diablo
January	56	56	56	56	56	56	56
February	61	61	61	61	61	61	62
March	65	66	66	66	66	66	67
April	70	70	71	71	72	72	72
May	75	76	78	78	79	79	79
June	81	82	84	84	85	85	86
July	84	86	88	89	90	90	91
August	84	86	88	88	89	89	90
September	82	83	85	86	86	86	87
October	76	76	77	77	78	78	78
November	65	65	65	65	65	65	65
December	57	57	57	56	56	56	56
Average	71	72	73	73	73	74	74

From daymet.ornl.gov; Daymet Software Version 2.0, Daymet Data Version 2.1

Figure 3-3: Average Monthly and Annual Total Historical Rainfall (in)

	Martinez	Concord	Bay Point	Pittsburg	Antioch	Brentwood	Diablo
January	4.2	3.7	3.6	3.4	3.3	3.1	3.3
February	4.4	3.9	3.8	3.5	3.4	3.2	3.3
March	3.4	3.0	2.9	2.7	2.6	2.5	2.6
April	1.4	1.3	1.2	1.1	1.1	1.1	1.2
May	0.7	0.6	0.6	0.6	0.6	0.6	0.6
June	0.2	0.2	0.2	0.1	0.1	0.1	0.1
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.2	0.2	0.2	0.2	0.2	0.2	0.2
October	1.1	0.9	0.9	0.9	0.9	0.9	0.9
November	2.8	2.4	2.3	2.2	2.1	2.0	2.0
December	4.0	3.5	3.5	3.3	3.2	2.9	3.1
Average	22	20	19	18	18	17	17

3.4. Service Area Population and Demographics

CCWD's current and historical service area population was developed based on data obtained from the California Department of Finance (DOF) for the cities and unincorporated area that are within CCWD's service area boundary. The data include the most recent 2010 US Census data.

To project population, the District used data from the Association of Bay Area Governments (ABAG), an entity that develops population, household, and economic forecasts for the nine-county Bay Area region. Population projections based on 2013 ABAG data for CCWD's entire service area are included in **Table 3-1W**, and for CCWD's retail treated water service area in **Table 3-1R**.

Future population growth in CCWD's retail treated water service area consists mostly of in-fill development, with the exception of the CNWS development. The City of Concord Community Reuse Plan proposes to develop approximately 5,000 acres of the CNWS, which is located within the District's TWSA. Based on conceptual plans, the development will include residential, commercial, and open space uses. CCWD's population estimates include the CNWS development. CCWD's population projections for the total service area reflect the potential for future development in east Contra Costa County.

Table 3-1W: Population - Current and Projected

	2015	2020	2025	2030	2035	2040
Population Served ^(a)	477,480	487,880	515,320	543,850	574,210	605,600

NOTES:

(a) Population includes Cities of Antioch, Bay Point, Brentwood (inside CCWD service area), Pittsburg, Martinez, Diablo Water District (City of Oakley), and CCWD's retail Treated Water Service Area.

Table 3-1R: Population - Current and Projected

	2015	2020	2025	2030	2035	2040
Population Served ^(a)	199,680	202,970	217,710	232,600	248,420	264,750

NOTES:

(a) Population of CCWD's retail TWSA, which includes Cities of Clayton, Clyde, Concord, Pacheco, Port Costa and parts of Martinez, Pleasant Hill and Walnut Creek.

4. System Water Use

This chapter describes and quantifies CCWD's current water use and water use projections through 2040. For the purposes of the UWMP, the terms "water use" and "water demand" are used interchangeably.

4.1. Recycled versus Potable and Raw Water Demand

In accordance with the UWMP guidebook, the demand met by recycled water supplies is shown as a separate line item on **Table 4-3W** and **Table 4-3R** for CCWD's wholesale and retail service areas, respectively. Recycled water is addressed comprehensively in Section 6.5.

4.2. Water Uses by Sector

CWC 10631

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

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural...

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

Table 4-1W and **Table 4-1R** present actual 2015 water use for CCWD's wholesale and retail service areas. **Table 4-2W** and **Table 4-2R** present projected water use within CCWD's wholesale and retail service areas in five-year increments over the next 25 years. For water supply planning purposes, the tables reflect total water use, irrespective of the source of supply and includes usage of local supplies by CCWD's municipal customers as well as actual and estimated future losses. The demand projections have been adjusted to account for anticipated reductions resulting from passive and active conservation savings. It should be noted that actual water use in 2015 was significantly reduced due to drought conditions and state-mandated water conservation requirements. For planning purposes, future water use estimates assume no drought or water use restrictions. It should also be noted that CCWD's retail water use is included as one of CCWD's "wholesale customers" in the wholesale water use tables for the purpose of data consistency and accounting.

Table 4-1W and **Table 4-1R** provides CCWD's actual 2015 wholesale and retail water use by use type, respectively.

Table 4-1W: Demands for Potable and Raw Water – Actual			
Use Type	2015 Actual		
	Additional Description	Level of Treatment When Delivered	Volume (AFY)
Sales to other agencies	Municipal	Raw Water	27,460
Sales to other agencies	Municipal	Drinking Water	3,400
Losses	Conveyance and Evaporation	Raw Water	3,700
Losses	Conveyance and Evaporation – to serve retail	Raw Water	7,210
Other	Local Supplies	Raw Water	3,690
Other	CCWD Retail	Raw Water	58,840
TOTAL			104,300
NOTES: (a) For purposes of the UWMP, CCWD Retail demands are considered part of CCWD's Wholesale Demands for data consistency and accounting. (b) CCWD conveys water for Brentwood that serves customers outside of the CCWD service area. This volume is not included in the current demand or future demand projections. (c) Local supplies are obtained and managed by municipal customers and not delivered by CCWD. Local supplies include City of Antioch's San Joaquin River diversions, and groundwater usage by Diablo Water District, Golden State Water Company, and City of Pittsburg. (d) Losses include raw water conveyance and raw water reservoir evaporative losses. CCWD's raw (untreated) water system is primarily through open channel gravity flow, and conveyance losses are estimated using a factor of 6 percent. Raw water evaporative losses are estimated to be 5,500 AFY based on historical data. (e) 2015 water use was significantly reduced due to drought conditions and state-mandated water conservation requirements. Absent these conditions, the normalized 2015 water use is estimated to be approximately 30% higher.			

Table 4-1R: Demands for Potable and Raw Water – Actual

Use Type	2015 Actual		
	Additional Description	Level of Treatment When Delivered	Volume (AFY)
Single Family		Drinking Water	13,610
Multi-Family		Drinking Water	4,630
Commercial		Drinking Water	4,070
Industrial		Drinking Water	80
Institutional/ Governmental		Drinking Water	1,190
Other	Temporary Service	Drinking Water	40
Industrial		Raw Water	26,490
Industrial	Local Supply	Raw Water	3,400
Landscape		Raw Water	1,050
Estimated Groundwater		Raw Water	3,000
Losses		Drinking Water	1,280
TOTAL			58,840
NOTES: (a) CCWD's retail treated water distribution system primarily serves retail customers, with a small number of wholesale customers. Losses represent retail and wholesale treated water losses. (b) Industrial local supply represents San Joaquin River diversions, which are obtained and managed by the industrial customer and not delivered by CCWD. (c) 2015 water use was significantly reduced due to drought conditions and state-mandated water conservation requirements. Absent these conditions, the normalized 2015 water use is estimated to be approximately 30% higher.			

Future demand projections were developed in coordination with CCWD's municipal customers and are based on an econometric model developed as part of CCWD's Future Water Supply Study (FWSS). The econometric model relied on historical data and a variety of influence factors on water use, including population, economy, and weather. In general, conservative modeling assumptions were used for planning purposes. To prevent under-estimation or over-estimation of future industrial demands, historical maximum demands were used for industries expected to continue operating in a similar manner moving forward. The demand projections compared well with city, county, and municipal planning documents.

Table 4-2W and **Table 4-2R** below show projected demands in five-year increments through 2040 by use type for the District's wholesale and retail service areas, respectively.

Table 4-2W: Demands for Potable and Raw Water - Projected

Use Type	Additional Description	Projected Water Use (AFY)				
		2020	2025	2030	2035	2040
Sales to other agencies	Municipal	50,000	53,600	57,900	61,800	64,500
Retail demand ^(a)	CCWD Retail	86,500	88,500	90,600	93,300	96,500
Losses	Conveyance and Evaporation	4,500	4,600	4,800	4,900	4,900
Losses	Conveyance and Evaporation – for retail	7,700	7,600	7,400	7,300	7,300
TOTAL		148,700	154,300	160,700	167,300	173,200

NOTES:

(a) For purposes of the UWMP, CCWD Retail demands are considered part of CCWD's Wholesale Demands for data consistency and accounting.

(b) Future demand projections are shown irrespective of source of supply. However, demand projections have been adjusted to reflect anticipated reductions due to passive and active conservation savings. Recycled water use is shown separately in **Table 4-3W**.

(c) Estimated future losses include raw water conveyance and raw water reservoir evaporative losses, which are estimated based on a factor of 6 percent for conveyance losses and 5,500 AFY for evaporative losses based on historical data. Losses in the treated water distribution system are included in the treated water demand projections in **Table 4-2R**.

Table 4-2R: Demands for Potable and Raw Water - Projected

Use Type	Additional Description	Projected Water Use (AFY)				
		2020	2025	2030	2035	2040
Single Family	Treated Water	24,300	25,300	26,300	27,600	29,200
Multi-Family	Treated Water	7,700	7,900	8,100	8,500	8,900
Commercial	Treated Water	6,700	6,800	7,000	7,300	7,700
Industrial	Treated Water	100	200	200	200	200
Institutional / Governmental	Treated Water	2,300	2,400	2,500	2,600	2,800
Industrial	Raw Water	40,400	40,900	41,400	42,000	42,500
Landscape irrigation	Raw Water	1,800	1,800	1,800	1,800	1,800
Other	Estimated Groundwater	3,200	3,200	3,300	3,300	3,400
TOTAL		86,500	88,500	90,600	93,300	96,500

NOTES:

(a) Future demand projections are shown irrespective of source of supply. However, demand projections have been adjusted to reflect anticipated reductions due to passive and active conservation savings. Recycled water use is shown separately in **Table 4-3R**.

(b) Future projections of industrial water use is based on maximum historical use for industries that are anticipated to continue operating in a similar manner.

(c) Estimated future treated water losses are included in the treated water demand projections. Based on historical data, treated water distribution losses are estimated to be approximately 8 percent on average.

The following two tables show total water demand, split by potable/raw water demand and recycled water demand, in five-year increments from 2015 through 2040. **Table 4-3W** includes the District's wholesale demands and **Table 4-3R** shows the District's retail demands.

Table 4-3W: Total Water Demands						
	2015	2020	2025	2030	2035	2040
Potable and Raw Water (from Tables 4-1W and 4-2W)	104,300	148,700	154,300	160,700	167,300	173,200
Recycled Water Demand (from Table 6-4W)	9,260	15,000	16,100	16,900	17,700	17,800
TOTAL WATER DEMAND	113,560	163,700	170,400	177,600	185,000	191,000
NOTES: (a) For purposes of the UWMP, CCWD Retail (potable, raw, and recycled water) demands are considered part of CCWD's Wholesale Demands for data consistency and accounting. (b) Future potable and raw water demand projections are shown irrespective of source of supply. However, demand projections have been adjusted to reflect anticipated reductions due to passive and active conservation savings. (c) Only recycled water demands that offset a retail or wholesale water supply from CCWD are included in this table. Per DWR UWMP guidebook, this table does not include Central Contra Costa Sanitary District recycled water plant use (approximately 1,000 AFY).						

Table 4-3R: Total Water Demands						
	2015	2020	2025	2030	2035	2040
Potable and Raw Water (from Tables 4-1R and 4-2R)	58,840	86,500	88,500	90,600	93,300	96,500
Recycled Water Demand (from Table 6-4R)	8,650	14,000	14,900	15,700	16,500	16,600
TOTAL WATER DEMAND	67,490	100,500	103,400	106,300	109,800	113,100

4.3. Distribution System Water Losses

CWC 10631

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

(J) Distribution system water loss

(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.

CCWD is a signatory of the California Urban Water Conservation Council Memorandum of Understanding and has been performing annual water loss audits using the AWWA Standard Water Audit and Water Balance worksheet since its inception. As described in Appendix L of the UWMP Guidebook, the water audit pertains exclusively to the potable portion of a water system. CCWD's potable water system is primarily a retail distribution system with a small number of wholesale customers. Therefore, consistent with Appendix L and AWWA's method of accounting, the wholesale treated water use is considered "water exported" in the water audit.

As indicated in the following tables, DWR **Table 4-4W** does not apply because CCWD's wholesale customers are served primarily through an untreated water gravity system. DWR **Table 4-4R** provides the water loss summary for CCWD's potable water system for calendar year 2015, using the DWR Water Audit Method. Distribution system water losses accounted for approximately 5 percent of the treated water produced in 2015.

**Table 4-4W: Water Loss Summary Most Recent 12 Month Period Available
(as calculated in Appendix L worksheet)**

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss (AF)
01/2015	10,910
NOTES: (a) Consistent with Appendix L of the UWMP Guidebook and DWR's Water Audit Method, the audit applies exclusively to the potable portion of a water system. CCWD's wholesale customers are served primarily through an untreated water gravity system. The losses associated with wholesale customers receiving potable water are included in Table 4-4R below as "water exported." (b) The volume of water loss presented in this table are estimated and include raw water conveyance and raw water reservoir evaporative losses. CCWD's raw (untreated) water system is primarily through open channel gravity flow, and conveyance losses are estimated using a factor of 6 percent. Raw water evaporative losses are estimated to be 5,500 AFY based on historical data.	

Table 4-4R: Water Loss Summary Most Recent 12 Month Period Available (as calculated in Appendix L worksheet)

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss (AF)
01/2015	1,280
NOTES: (a) CCWD's potable water system primarily serves retail customers, with a small number of wholesale customers. Therefore, consistent with Appendix L, the wholesale treated water is considered "water exported" in the water audit. (b) Distribution system water losses accounted for approximately 5% of the treated water produced in 2015.	

4.4. Future Water Savings and Water Use for Lower Income Households

As indicated in **Table 4-5R** below, water use for lower income households and savings associated with passive and active conservation are included in the water use projections noted in this Chapter. Further discussion of these two components are included in the sections below.

Table 4-5R: Inclusion in Water Use Projections

Component	Included?
Are Future Water Savings Included in Projections?	Y
If "Yes" to above, state the section or page number where citations of the codes, ordinances, etc. utilized in demand projections are found.	Location in UWMP - Section 4.4.1
Are Lower Income Residential Demands Included in Projections?	Y

4.4.1. Passive Conservation Savings

Passive conservation savings are water savings resulting from plumbing code changes and natural fixture replacement. These savings are not achieved through specific actions undertaken by the CCWD. Aggregate passive conservation savings was estimated based on water savings potential from plumbing codes and ordinances. For CCWD's retail treated water service area and the wholesale municipal customers' service areas. The estimates were based on water savings potential from plumbing codes and ordinances, such as statewide standards for toilet and urinal water use enacted under AB 715, plumbing fixture efficiency requirements enacted by SB 407 and SB 837,

and requirements to adopt a model landscape ordinance enacted by AB 1881. The estimates were fine-tuned based on fairly conservative market penetration assumptions. The aggregate savings estimates were then scaled to the projected population and pro-rated the water savings to the TWSA and each of the municipal agency's service areas based on its share of aggregate population.

Over the past two decades, per capita water use for toilets, showers, and clothes washers has decreased significantly due to the combined factors of technology improvement (particularly with clothes washers), state and federal efficiency standards (primarily affecting toilets and showerheads), as well as private sector conservation efforts. Water use for toilets, on a per capita basis, has decreased by approximately 38 percent, while water use for showers has decreased by roughly 30 percent. Gains in clothes washer efficiency have lagged behind those for toilets and showerheads, but are now accelerating as the market for clothes-washers transitions to more energy and water efficient front-load washer technology. Average efficiencies for toilets, showers, and clothes washers are expected to continue to improve due to replacement of older, less efficient plumbing fixtures and construction of new homes and businesses fitted with modern appliances and plumbing fixtures.

4.4.2. Active Conservation Savings

In addition to passive savings, the District also expects to achieve savings associated with active conservation. Active conservation savings are water savings achieved from CCWD-implemented conservation programs and policies. Active conservation is a critical part of CCWD's water supply portfolio. CCWD has been implementing active conservation programs for over 25 years, significantly reducing water use and delaying the need for additional water supplies. The success of these programs is evidenced by the fact that CCWD delivers less water today than during the early 1990s, despite a significant increase in population. CCWD performs ongoing outreach to its customers in its retail and wholesale service areas to encourage them to conserve water, eliminate water waste, and adapt to the possibility of drier years ahead.

CCWD currently offers a wide range of conservation programs and services to its customers. Programs are implemented throughout the District's retail and wholesale service areas. The programs and services fall into three main categories including: Conservation Surveys, Rebate Incentives, and Education & Outreach. Within these broad categories, the programs and services are further tailored for residential, commercial, industrial, and large landscape water uses.

The District's near-term water conservation goals are based on the requirements of Senate Bill X7-7 (SB X7-7 or 20x2020). CCWD anticipates that through its active conservation program, water savings will continue to increase annually, reaching a target of approximately 3,000 acre-feet per year (AFY) in 2020. CCWD is also committed to long-term water use efficiency and will continue to implement active conservation programs beyond 2020 to achieve an estimated 3,000 AFY or more in active conservation savings throughout the planning horizon. These savings are included in demand projections presented in this Chapter.

More information on the District's active conservation program is included in Chapter 9 and Appendix D.

4.4.3. Water Use for Lower Income Households

CCWD developed estimates of future low-income household water use for the District's retail Treated Water Service Area based on the Regional Housing Needs Allocation process which was overseen in the Bay Area by ABAG. This requirement is not directly applicable to CCWD, however each City or land use agency within CCWD's boundary is given a set of numbers representing housing units for each income level that the jurisdiction must help to construct, rehabilitate or conserve during the housing period. The estimated water use for low income housing is included in CCWD's projected water demands (ABAG 2013).

Figure 4-1 : Lower Income Household Water Use					
	2020	2025	2030	2035	2040
Number of New Lower-Income Households	740	1,800	1,810	1,780	1,800
Lower-Income Water Demands (AFY)	200	490	490	480	490

4.5. Climate Change

Based on ongoing research being conducted on the effects of climate change on water supply and demand, the District continues to examine climate- and weather-induced water demand patterns to gain a more thorough understanding of the importance of climate in shaping water demands relative to longer-term socioeconomic factors and the role that actual weather plays in influencing shorter-term demand variability. Additionally, the District evaluates climate scenarios with respect to the possible duration and frequency of future droughts, as well as its impact on the availability of existing water supplies.

CCWD considers the potential effects of climate change on water supply and demands in its long-range planning efforts. Changes in local air temperatures, statewide and local precipitation, and sea level rise will affect both supplies and demand. Although the extent of these changes is uncertain, scientists agree that some level of change is inevitable. Therefore, it is prudent for CCWD to implement flexible adaptation measures that will allow natural and human systems to respond to these climate change impacts in timely and effective ways. Like other water agencies, CCWD faces challenges of interpreting new climate change information and discerning which response methods and approaches will be most appropriate for its planning needs.

There is potential for water demand in CCWD's service area to increase as a result of more frequent, longer, and more-extreme heat waves, increased air temperatures, and changes in precipitation. Much of the service area's seasonal pattern of demand is due to higher outdoor and landscaping irrigation demands during the summer months. Warming temperatures and heat waves will likely intensify the need for summer irrigation and exacerbate the seasonal demand differential.

5. SB X7-7 Baselines and Targets

Beginning with the 2010 UWMP, the Water Conservation Bill of 2009, Senate Bill X7-7 (SB X7-7), required each urban retail water supplier to include the following in its UWMP:

- Baseline daily per capita water use – how much water is used within an urban water supplier’s distribution system area on a per capita basis. It is determined using water use and population estimates from a defined range of years.
- Urban water use target – how much water is planned to be delivered in 2020 to each resident within an urban water supplier’s distribution system area, taking into account water conservation practices that currently are and plan to be implemented.
- Interim urban water use target – the planned daily per capita water use in 2015, a value halfway between the baseline daily per capita water use and the urban water use target.

In the 2010 UWMP, CCWD calculated its interim 2015 and 2020 targets through the use of a selected target method and Department of Finance population data available at the time. Water suppliers are able to update their calculation methodologies and water use target in the 2015 UWMP. This section presents CCWD’s updated interim 2015 and 2020 targets based on the most recent 2010 US Census data, and demonstrates CCWD’s compliance with its interim 2015 urban water use target.

CCWD is both a retail and wholesale water supplier. This section fulfills the SB X7-7 requirements for CCWD’s retail TWSA. CCWD has also prepared a Regional Alliance analysis in compliance with SB X7-7 requirements, which includes its wholesale municipal customers (Cities of Antioch, Pittsburg, Martinez, Golden State Water Company, and Diablo Water District). The Regional Alliance analysis and tables are provided in Appendix B.

This section includes DWR’s SB X7-7 verification forms pertaining to CCWD’s retail service area, which are also included in Appendix E. CCWD has completed the following steps to meet the UWMP requirements identified in SB X7-7:

1. Determine Base Daily Per Capita Water Use
2. Determine 2020 Urban Water Use Target
3. Determine Interim 2015 Urban Water Use Target
4. Demonstrate Compliance with Interim 2015 Urban Water Use Target

Table 5-1 provides the units of measure that will be used throughout this section.

Table 5-1: Units of Measure Used in UWMP (SB X7-7 Table 0)

AF

5.1. Determine Base Daily Per Capita Water Use

5.1.1. Baseline Period

As defined in CWC Section 10608.12(b), base daily per capita water use is the average gross water use reported in gallons per capita per day (gpcd) and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010. For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water, the water supplier has the option to extend the base period up to an additional five years to a maximum continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

Additionally, as described in CWC Section 10608.22, water agencies must achieve a minimum daily per capita use reduction of 5 percent of base daily per capita water use, calculated using a five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010. Determination of the 10-year and 5-year baseline periods is shown in **Table 5-2**.

Table 5-2: Baseline Period Ranges (SB X7-7 Table 1)

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	39,710	AF
	2008 total volume of delivered recycled water	680	AF
	2008 recycled water as a percent of total deliveries ^(a)	2	percent
	Number of years in baseline period	10	years
	Year beginning baseline period range	1999	
	Year ending baseline period range	2008	
5-year baseline period	Number of years in baseline period	5	years
	Year beginning baseline period range	2004	
	Year ending baseline period range	2008	

NOTES:

(a) The 2008 total volume of delivered recycled water only includes recycled water use within CCWD's retail TWSA boundary.

5.1.2. Population

CCWD developed service area population estimates according to guidance provided in Methodology 2 of DWR's February 2016 *"Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use."* The method used to determine population is also indicated in **Table 5-3**.

CCWD utilized its GIS database and the following sources to calculate population data:

- U.S. Census Bureau (Census) data from 1990, 2000, and 2010
- Data published by the DOF for non-census years

Table 5-3: Method for Population Estimates (SB X7-7 Table 2)	
Method Used to Determine Population	
☒	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
☐	2. DWR Population Tool
☐	3. Other DWR recommends pre-review

CCWD's total service area includes areas served by wholesale deliveries from CCWD. The SB X7-7 evaluation presented in this section is for CCWD's retail treated water service area only. CCWD's population estimates are based on DOF population data for the cities and unincorporated areas within the CCWD retail treated water service area, which includes the cities of Clayton, Clyde, Concord, Pacheco, Port Costa, and portions of Martinez, Pleasant Hill, and Walnut Creek. **Figure 3-1** shows CCWD's retail treated water service area. Using this approach, CCWD determined the baseline and compliance year population for the retail treated water service area as shown in **Table 5-4**.

Table 5-4: Service Area Population (SB X7-7 Table 3)		
Year		Population
10-Year Baseline Population		
Year 1	1999	190,580
Year 2	2000	192,100
Year 3	2001	192,110
Year 4	2002	194,420
Year 5	2003	194,220
Year 6	2004	194,270
Year 7	2005	193,080
Year 8	2006	190,660
Year 9	2007	189,660
Year 10	2008	190,660
5-Year Baseline Population		
Year 1	2004	194,270
Year 2	2005	193,080
Year 3	2006	190,660
Year 4	2007	189,660
Year 5	2008	190,660
2015 Compliance Year Population		
2015		199,680
NOTES:		
(a) Population for CCWD's retail treated water service area was determined using Department of Finance data.		

5.1.3. Gross Water Use

The gross water use is defined in CWC Section 10608.12(g) as the total volume of water entering the distribution system excluding recycled water. Because there is only one source of water for CCWD's retail treated water distribution system, CCWD's gross water use for its retail treated water service area was determined as the amount entering the treated water distribution system on behalf of the retail treated water customers. The metered water use only includes treated water from CCWD, therefore recycled water is already excluded. There were no optional adjustments or deductions made.

CCWD's gross water use for the 10-year base period of 1999 to 2008 are presented in **Table 5-5**.

Table 5-5: Annual Gross Water Use (SB X7-7 Table 4)			
	Baseline Year	Volume Into Distribution System	Annual Gross Water Use
10 Year Baseline - Gross Water Use			
Year 1	1999	37,770	37,770
Year 2	2000	38,700	38,700
Year 3	2001	41,340	41,340
Year 4	2002	39,540	39,540
Year 5	2003	39,810	39,810
Year 6	2004	41,620	41,620
Year 7	2005	39,540	39,540
Year 8	2006	39,930	39,930
Year 9	2007	41,070	41,070
Year 10	2008	39,710	39,710
10 Year Baseline Average Gross Water Use			39,900
5 Year Baseline - Gross Water Use			
Year 1	2004	41,620	41,620
Year 2	2005	39,540	39,540
Year 3	2006	39,930	39,930
Year 4	2007	41,070	41,070
Year 5	2008	39,710	39,710
5 Year Baseline Average Gross Water Use			40,370
2015 Compliance Year - Gross Water Use			
	2015	25,540	25,540
NOTES: (a) CCWD's retail SBX7-7 analysis is for its retail treated water distribution system. (b) No optional adjustments were made, therefore Annual Gross Water Use equals the Volume Into Distribution System.			

5.1.4. Baseline Gallons Per Capita Per Day

Table 5-6 calculates the 5-year and 10-year baselines using the data population from **Table 5-4** and gross water use from **Table 5-5**.

Table 5-6: Gallons per Capita per Day (GPCD) (SB X7-7 Table 5)				
Baseline Year		Service Area Population	Annual Gross Water Use	Daily Per Capita Water Use (GPCD)
10 Year Baseline GPCD				
Year 1	1999	190,580	37,770	177
Year 2	2000	192,100	38,700	180
Year 3	2001	192,110	41,340	192
Year 4	2002	194,420	39,540	182
Year 5	2003	194,220	39,810	183
Year 6	2004	194,270	41,620	191
Year 7	2005	193,080	39,540	183
Year 8	2006	190,660	39,930	187
Year 9	2007	189,660	41,070	193
Year 10	2008	190,660	39,710	186
10 Year Average Baseline GPCD				185
5 Year Baseline GPCD				
Baseline Year		Service Area Population	Gross Water Use	Daily Per Capita Water Use (GPCD)
Year 1	2004	194,270	41,620	191
Year 2	2005	193,080	39,540	183
Year 3	2006	190,660	39,930	187
Year 4	2007	189,660	41,070	193
Year 5	2008	190,660	39,710	186
5 Year Average Baseline GPCD				188
2015 Compliance Year GPCD				
2015		199,680	25,540	114

Table 5-7 presents the calculated gpcd for the baseline years and compliance year. The District's 10-year baseline gpcd is 185 gpcd and the 5-year baseline is 188 gpcd. In 2015, the District's gpcd was 114 gpcd.

Table 5-7: Gallons per Capita per Day (SB X7-7 Table 6)	
10 Year Baseline GPCD	185
5 Year Baseline GPCD	188
2015 Compliance Year GPCD	114

5.2. Determine 2020 Urban Water Use Target

The CWC Section 10608.20(b) provides four methods for calculating the 2020 water use target. These methods are outlined in Section 5.7 of DWR's Guidebook. CCWD selected Target Method 1 to determine its 2020 water use target, as shown in **Table 5-8**. Target Method 1 requires a straight 20 percent reduction from CCWD's 10-year baseline gpcd.

Table 5-8: 2020 Target Method (SB X7-7 Table 7)	
☒	Method 1
☐	Method 2
☐	Method 3
☐	Method 4

Using Target Method 1, the District's 2020 Target gpcd is 148 gpcd, as noted in **Table 5-9** below.

Table 5-9: Target Method 1 - 20% Reduction (SB X7-7 Table 7-A)	
10-Year Baseline GPCD	2020 Target GPCD
185	148

As described in CWC Section 10608.22, water agencies must achieve a minimum daily per capita use reduction of 5 percent of base daily per capita water use, calculated using a five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010. **Table 5-10** confirms the minimum reduction required for 2020 water use target and shows that CCWD's confirmed 2020 target is 148 gpcd.

Table 5-10: Confirm Minimum Reduction for 2020 Target (SB X7-7 Table 7-F)			
5 Year Baseline GPCD	Maximum 2020 Target	Calculated 2020 Target	Confirmed 2020 Target
188	179	148	148

5.3. Determine Interim 2015 Water Use Target

The interim urban water use target is defined in the CWC Section 10608.12 (j) as the midpoint between the base daily per capita water use and the urban water use target for 2020. As presented in **Table 5-11**, the 2015 interim water use target is calculated to be 167 gpcd.

Table 5-11: 2015 Interim Target GPCD (SB X7-7 Table 8)

Confirmed 2020 Target	10-year Baseline GPCD	2015 Interim Target GPCD
148	185	167

5.4. Compliance with 2015 Water Use Target

Due to the success of CCWD's past and current water use efficiency efforts, CCWD's actual 2015 gpcd for its retail treated water service area was 114 gpcd, which meets the interim 2015 target and demonstrates that CCWD is on track with meeting its 2020 target, as shown in **Table 5-12**.

Table 5-12: 2015 Compliance (SB X7-7 Table 9)

Actual 2015 GPCD	2015 Interim Target GPCD	Did Supplier Achieve Targeted Reduction for 2015?
114	167	Yes
NOTES: (a) No optional adjustments were made to the actual 2015 GPCD for extraordinary events, weather normalization, or economic reasons.		

5.5. Regional Alliance

CCWD is both a retail and wholesale water supplier. CCWD fulfilled its SB X7-7 reporting requirements for its retail treated water service area and demonstrated compliance with its individual 2015 urban water use target in Sections 5.1 through 5.4. CCWD is also participating in a Regional Alliance on behalf of its wholesale municipal customers and has included a Regional Alliance Report as Appendix B. The Regional Alliance includes CCWD's retail service area and CCWD's wholesale municipal customers (Cities of Antioch, Pittsburg, and Martinez, Golden State Water Company, and Diablo Water District). CCWD submitted a letter to DWR on June 8, 2011 stating that a Regional Alliance was formed and providing a list of the water supplier members. A copy of the letters is included in the Regional Alliance Report in Appendix B. Additionally, CCWD's wholesale municipal customers have provided statements in their 2010 and 2015 UWMPs that they are members of CCWD's Regional Alliance.

5.6. Measures, Programs, and Policies to Achieve SB X7-7 Water Use Reduction

CCWD has met its interim 2015 water use target and has already made significant progress toward meeting its 2020 water use target. Per capita consumption is anticipated to increase in the coming years as a result of drought rebound and improving economic conditions. Given the uncertainty in the level and timing of rebound in water use, CCWD will continue to develop a flexible plan to ensure it achieves the 2020 target.

To encourage water savings by its customers, CCWD will continue to implement its Water Conservation Program that has been active for over 20 years. CCWD's Water Conservation Program is designed to reduce long-term water demand in conformance with the CCWD's FWSS. CCWD's demand has been reduced by an estimated 14,000 AFY over the past two decades as a result of passive and active conservation activities. CCWD anticipates an additional 10,000 AFY in water savings will be achieved from now to 2040 through future passive and active conservation activities. The Water Conservation Program also played a key role in helping customers meet the State-mandated conservation requirements in the 2015 Drought Management Program and will be an important tool for CCWD in meeting its 2020 urban water use target. Details on CCWD's Water Conservation Program are provided in Chapter 9 and Appendix D of the UWMP. Programs are offered by CCWD to both its retail and wholesale customers.

In addition to active conservation activities implemented through CCWD's Conservation Program, passive conservation is also achieved through state and local efficiency codes. Efficiency codes that require efficient fixtures and appliances, grant funding to promote water conservation, residential weather-based irrigation controllers, and efficient landscape practices are expected to achieve additional water use reductions in CCWD's service area.

Future recycled water projects within CCWD's service area will also contribute towards achieving water use reduction goals. Potential opportunities include recycled water projects for agricultural irrigation, urban landscape irrigation, industrial reuse, and groundwater recharge. Section 6.5.4.1 of this UWMP includes a more detailed discussion of current and future recycled water opportunities; **Table 6-4W** and **Table 6-4R** provide current and projected future use of recycled water in CCWD's wholesale and retail service areas, respectively. It is anticipated that by the year 2040, recycled water use will be approximately 18,000 AFY in CCWD's service area.

CCWD will continue to work collaboratively with municipalities in its service area to encourage recycled water use in future development projects. For example, the City of Concord Community Reuse Plan (Reuse Plan) proposes to redevelop approximately 5,000 acres of the CNWS, which is located within CCWD's TWSA. CCWD staff worked with the City of Concord throughout the planning process to incorporate significant water conservation measures, low water demand development, and recycled water standards into the CNWS Reuse Plan. These standards have reduced the project's potable water demand projections by more than 50 percent. It is estimated that the project will utilize recycled water in an amount equal to or greater than the net potable water demand. There are also opportunities to provide up to an additional 3,000 AFY of recycled water if the planned open spaces and parks are irrigated.

More information on the District's recycled water system and projects is provided in Chapter 6.

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6. System Supplies

CCWD is almost entirely dependent upon the Sacramento-San Joaquin Delta (Delta) for its water supply. CCWD's primary source of water supply is the United States Bureau of Reclamation's (Reclamation) CVP. Other water supply sources used within the service area include San Joaquin River, Mallard Slough, recycled water, a minor amount of groundwater, and water transfers.

6.1. Purchased or Imported Water

The CVP is the District's primary water source. CVP water consists of unregulated and regulated flows from storage releases from Shasta, Folsom, and Clair Engle reservoirs into the Sacramento River. CCWD's long-term CVP contract with Reclamation was renewed in 2005 and has a term of 40 years.

The contract provides for a maximum delivery of 195,000 AFY of CVP supply, which is subject to reduction during water shortages including regulatory restrictions and drought. The Municipal and Industrial (M&I) Water Shortage Policy defines the reliability of CCWD's CVP supply and was developed by Reclamation to establish CVP water supply levels that would sustain urban areas during severe or continuing droughts and provide for minimum health and safety. Allocations of 100 percent are based on an M&I user's contractual amount. Allocations of less than 100 percent are based on historical use. The M&I Water Shortage Policy provides for a minimum allocation of 75 percent of adjusted historical use for urban contractors until agricultural contractors' allocations fall below 25 percent.

In January 2004, CCWD and EBMUD entered into an agreement to wheel water through the Freeport Regional Water Project facilities. In 2007, the EBMUD-CCWD untreated water interconnection was completed, which connected CCWD's Los Vaqueros Pipeline and the EBMUD's Mokelumne Aqueduct in Brentwood. The intertie enables CCWD to divert up to 3,200 AFY of its CVP supply at the Freeport diversion facility where water quality is typically better than at CCWD's Delta intakes. The new intertie also provides for the sharing of water supplies between the agencies during emergency conditions or to support planned maintenance. This does not increase CVP supply beyond the maximum allocation as defined by the M&I Water Shortage Policy.

6.2. Groundwater

The primary groundwater basins within the CCWD service area are the Ygnacio, Clayton, Pittsburg Plain, and Tracy Groundwater Basins or Sub-Basins.

CCWD does not manage groundwater, nor does it use groundwater to meet any demands. There are an undetermined number of wells throughout the CCWD service area owned by industries, private individuals, and public municipal water utilities including the Cities of Martinez and Pittsburg, Golden State Water Company, and Diablo Water District. Estimates indicate that these users can pump approximately 6,500 AFY based on available pumping records and land-use-based estimates. Existing wells in the vicinity of the Bollman Water Treatment Plant could provide

approximately 1,000 AFY to an industrial customer, but are limited by threat of contamination from adjacent industrial areas and physical factors such as air entrainment.

As indicated below, **Table 6-1W** and **Table 6-1R** do not apply because CCWD does not manage groundwater as a water supply resource.

Table 6-1W: Groundwater Volume Pumped						
☒	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin		0	0	0	0	0
Fractured Rock		0	0	0	0	0
TOTAL		0	0	0	0	0

Table 6-1R: Groundwater Volume Pumped						
☒	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin		0	0	0	0	0
Fractured Rock		0	0	0	0	0
TOTAL		0	0	0	0	0

6.3. Surface Water

CCWD holds a separate Los Vaqueros water right that allows diversion of excess Delta Flows to Los Vaqueros Reservoir for storage. CCWD also has a permit and a license that allow for total diversions of up to 26,700 AFY from the Delta at Mallard Slough. However, this water source often has high salinity levels and can only be used seasonally. Little or no water is available from Mallard Slough during dry periods.

Other agencies within CCWD's service area also maintain surface water diversions and are considered as part of the existing supply portfolio. The City of Antioch maintains pre-1914 water rights for diversion from the San Joaquin River and use within the City's limits. The City of Antioch is only able to use their diversion when water is fresh and its use is often limited by high salinity levels. When salinity becomes too high at Antioch's intake, CCWD provides water to the City.

ECCID maintains a pre-1914 water right on Indian Slough on Old River and has an agreement with CCWD to provide supplies in normal and dry years. Several industrial users within CCWD's service area also maintain surface water diversions. Inland Container (formerly Gaylord Container), Tesoro (formerly Tosco Corporation), Dupont and USS-Posco have rights on the San Joaquin River. However, similar to Mallard Slough and the City of Antioch, the surface water in the region is often too saline for industrial purposes and diversions under those water rights are often not made.

6.3.1. Los Vaqueros Water Right

CCWD holds a water right that allows diversion of up to 95,980 AFY of excess Delta Flows to Los Vaqueros Reservoir for storage between November 1 of each year and June 30 of the succeeding year, with the total combined limit on CCWD CVP contract and Los Vaqueros water right diversions equal to 242,000 AFY. The total limit on combined deliveries (including CVP contract and Los Vaqueros Water Right) is 195,000 AFY. The Los Vaqueros water right can only be diverted when there is surplus water in the Delta. Surplus conditions occur in the Delta when there is more than enough water in the system to meet all regulatory constraints and demands. In wetter years, the Delta is in surplus conditions for much of the late winter through early summer. Surplus conditions are more limited in duration in drier years. CCWD makes diversions to storage under the Los Vaqueros water right when surplus conditions occur, and then keeps that water in storage until it is needed. On average, CCWD has historically been able to divert 12,000 AFY of water to storage under the Los Vaqueros water right. Water diverted under the Los Vaqueros water right must be stored for a minimum of thirty days, so any supply benefit is discussed below as part of the expanded Los Vaqueros Reservoir.

6.3.1.1. Los Vaqueros Reservoir Expansion

The original Los Vaqueros (LV) Reservoir Project (100,000 AF total storage capacity) was built to improve CCWD's ability to deliver good water quality year-round. The recently expanded Los Vaqueros Reservoir (new total storage capacity of 160,000 AF) provides water supply reliability in years with low CVP contract allocation, in addition to providing the same water quality benefits of the original LV Project. Based on modeling done for the Los Vaqueros Expansion (LVE) Project Environmental Impact Report, up to 10,000 AF can be used in any year to offset previously planned transfer water from other sources. The remaining 30,000 AF would be available to supplement supplies during droughts. During a single dry year, CCWD could use up to 20,000 AFY from the expanded reservoir to meet demand. In an extended three-year drought, the supplies from the expanded reservoir would provide an average of 13,000 AFY to meet demands. If the drought extended beyond three years, the average annual amount available would be reduced accordingly.

6.3.2. Mallard Slough Supply

CCWD has additional water rights at Mallard Slough for a maximum diversion of Delta water of up to 26,700 AFY. Diversions from Mallard Slough are unreliable due to frequently poor water quality in the San Joaquin River at this point of diversion. Water quality conditions have restricted diversions from Mallard Slough to approximately 3,100 AFY (on average) with none available in

dry years. When Mallard Slough supplies are used, CVP diversions are reduced by an equivalent amount.

6.3.3. Antioch Diversions

The City of Antioch maintains a diversion from the San Joaquin River and a municipal reservoir. Antioch maintains pre-1914 water rights for diversion from the San Joaquin River and use within the City's limits. However, seawater intrusion and associated high salinity levels limit the use of the intake to times when the Delta outflow is sufficient to maintain salinity at acceptable levels. Therefore, Antioch relies on untreated water deliveries from CCWD to meet remaining customer demand.

6.3.4. Industrial River Diversions

Inland Container (formerly Gaylord Container) and Tesoro (formerly Tosco Corporation) have rights to divert up to 28,000 AFY and 16,650 AFY, respectively, from the San Joaquin River. Other industries that hold rights to water from the San Joaquin River are Dupont and USS-Posco. These supplies, like the Mallard Slough supply, are variable because of poor water quality due to seawater intrusion. Thus, these industries rely on untreated water deliveries from CCWD to meet demand.

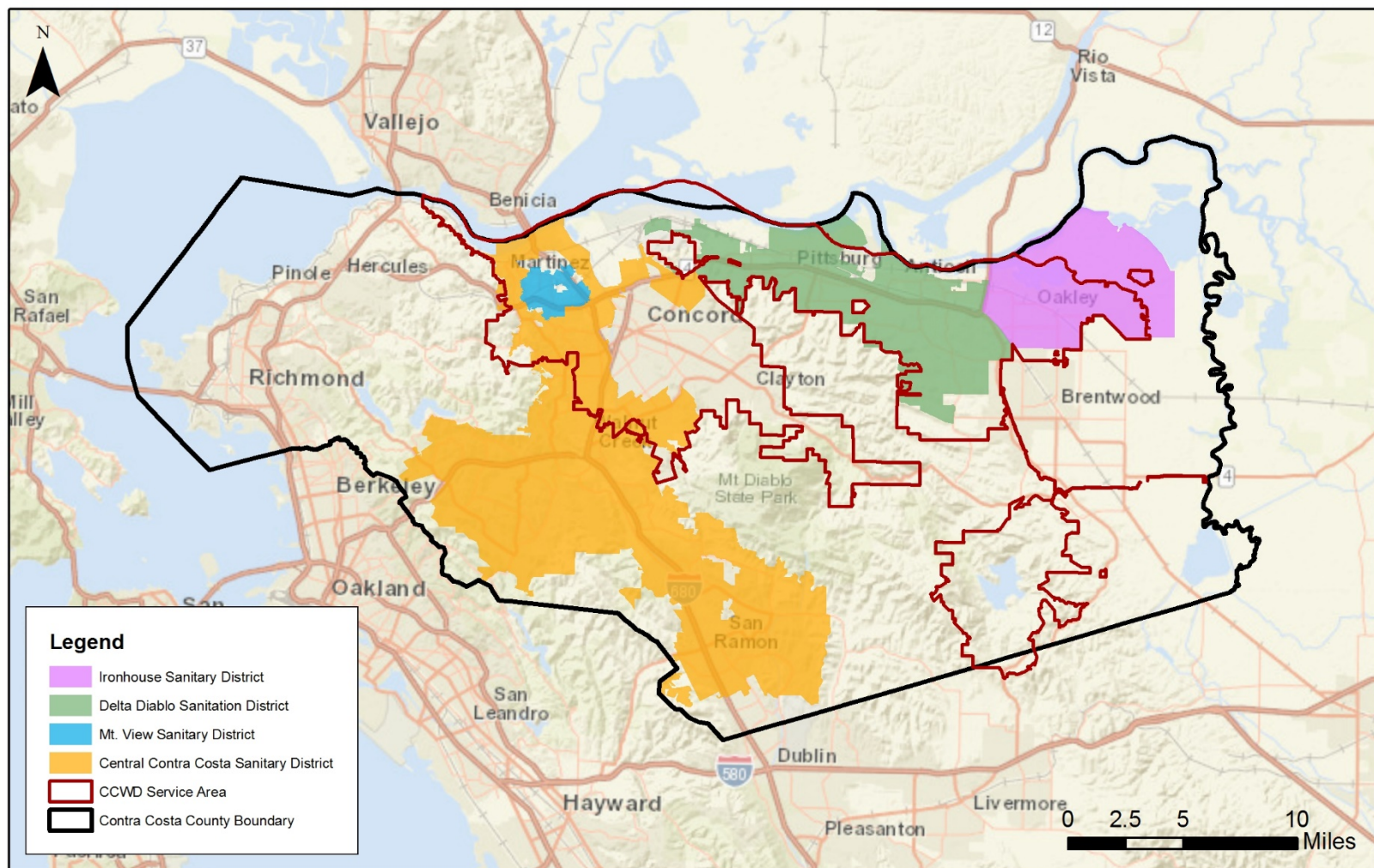
6.4. Stormwater

CCWD's Canal conveyance system intercepts minor quantities of stormwater in the area, but CCWD does not currently intentionally divert stormwater for beneficial reuse. Stormwater is not considered a source of supply for CCWD. Stormwater volumes captured directly in local reservoirs are offset by evaporation.

6.5. Wastewater and Recycled Water

The four wastewater treatment plants within CCWD's existing service area comprise the total potential sources of recycled water (see **Figure 6-1**). Currently, over 10,000 AFY of recycled water is put to direct beneficial use in CCWD's service area. CCWD has agreements with Central Contra Costa Sanitary District (CCCCSD) and Delta Diablo Sanitation District (DDSD) regarding specific projects that provide recycled water supplies for industrial uses, wildlife enhancement, and landscape irrigation within CCWD's service area.

Figure 6-1: Wastewater Agencies within CCWD Service Area



CCCSD provides recycled water for landscape irrigation uses to customers within the Cities of Martinez, Concord, and Pleasant Hill, including two golf courses, parks, several industrial and commercial businesses, a community college and the City of Pleasant Hill's community center and corporation yard. Current recycled water provided to customers is estimated to be approximately 700 AFY, and is expected to increase to approximately 760 AFY by 2020 based on CCCSD's planned projects. CCWD's full agreement with CCCSD allows for up to 1,630 AFY of dry year demand to be met with recycled water in specified areas.

DDSD provides recycled water for industrial and landscape irrigation uses. Delta Energy Center/ Los Medanos Energy Center (DEC/LMEC) currently receives approximately 8,000 AFY of recycled water from DDSD and is expected to continue to receive the same amount of recycled water throughout the planning horizon. DDSD also currently provides approximately 750 AFY of recycled water to the Cities of Pittsburg and Antioch for landscape irrigation, which is expected to increase to 1,500 AFY in the planning horizon based on DDSD's planned projects.

The City of Concord Community Reuse Plan (Concord Reuse Plan) proposes to redevelop approximately 5,000 acres of the former CNWS, which is located within CCWD's treated water service area. CCWD staff worked with the City of Concord throughout the planning process to incorporate significant water conservation measures, low water demand development, and recycled water standards into the Concord Reuse Plan. These standards have reduced the project's potable water demand projections by more than 50 percent. It is estimated that the project will utilize recycled water in an amount equal to or greater than the net potable water demand. Based on the January 2010 Final EIR for the Concord Reuse Plan, the project will ultimately utilize 2,800 AFY of recycled water.

6.5.1. Recycled Water Coordination

CWC 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.

CCWD coordinated the preparation of this section with the wastewater agencies that operate within its service area. Water recycling is a component of CCWD's long-term sustainable water supply strategy and CCWD collaborates with local wastewater agencies proposing to provide recycled water for appropriate designated uses. Over 10,000 AFY of recycled wastewater is currently used in CCWD's service area.

6.5.2. Wastewater Collection, Treatment, and Disposal

CWC 10633

(a) (Describe) 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.

CWC 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.

A brief description is provided for each wastewater treatment plant below, summarizing the existing treatment processes, current flows, and wastewater disposal methods. **Table 6-2R** provides a summary of the four wastewater agencies that collect and treat wastewater within CCWD's retail TWSA. **Table 6-3W** and **Table 6-3R** summarizes the flows, treatment levels, and effluent disposal methods of the wastewater treatment plants.

6.5.2.1. Central Contra Costa Sanitary District (CCCSD)

The CCCSD wastewater treatment plant is located at the intersection of Interstate 680 and Highway 4. The treatment plant has a current dry weather permitted capacity of 53.8 mgd with an average dry weather flow of 27.8 mgd to the treatment plant. CCCSD provides wastewater collection and treatment for approximately 462,000 residents and 3,000 businesses in central Contra Costa County, including portions of the EBMUD and CCWD service areas. Effluent from the activated sludge secondary treatment process is disinfected with ultraviolet (UV) light and then discharged into Suisun Bay via a submerged outfall. A portion of the UV disinfected secondary effluent is diverted to CCCSD's recycled water production plant for tertiary treatment using direct filtration followed by disinfection with sodium hypochlorite. CCCSD's recycled water conforms to Title 22 requirements for unrestricted use. CCCSD currently provides approximately 700 AFY (approximately 228 million gallons per year or 0.6 mgd) to recycled water customers within the Cities of Concord, Pleasant Hill, and Martinez and utilizes up to 1,090 AFY (approximately 355 million gallons per year or 1 mgd) for plant use.

6.5.2.2. Mt. View Sanitary District (MVSD)

The MVSD wastewater treatment plant is located near the Shell Oil Refinery and Highway 680 on unincorporated land in Contra Costa County. MVSD serves approximately 18,250 people in the City of Martinez and in adjacent unincorporated areas. Treatment processes include two stage trickling filtration for ammonia removal, secondary clarification, sand filtration, UV disinfection and anaerobic digestion of biosolids. Treated effluent from MVSD enters a constructed marshland west of I-680, flows to Peyton Slough, which then combines with surface runoff, and tidal flows supplying a natural marshland east of I-680, before ultimately discharging to the Carquinez Strait. The plant has a dry weather permitted capacity of 3.2 mgd and currently treats an average of 1.1 mgd.

6.5.2.3. Delta Diablo Sanitation District (DDSD)

DDSD was originally formed in 1955 to protect the health of the public and the environment by collecting and effectively treating wastewater within its service area of Bay Point, Pittsburg and

Antioch. DDSD's wastewater collection and conveyance systems include five pump stations, approximately 57 miles of gravity sewers and 14 miles of force mains. DDSD's wastewater treatment plant is located on the Pittsburg-Antioch Highway at the border of the two cities and has a current dry weather permitted capacity of 16.5 mgd with an ultimate capacity of 22.7 MGD. The average dry weather flow to the treatment plant is approximately 13.2 mgd. Effluent from the trickling filter/activated sludge secondary treatment process is disinfected and discharged to New York Slough, a section of the San Joaquin River within the Sacramento-San Joaquin Delta. A 12.8 mgd recycled water facility (RWF) was completed in 2001 and provides DEC/LMEC approximately 8,600 AFY of tertiary treated recycled water for cooling and process water. The RWF is one of the largest industrial recycled water projects in the State of California. The 2004 General Agreement for Recycled Water between CCWD and DDSD provides for an additional 1,654 AFY of recycled water to irrigation customers located within the Cities of Pittsburg and Antioch. DDSD's recycled water conforms to Title 22 requirements for unrestricted use.

6.5.2.4. Ironhouse Sanitary District (ISD)

The ISD wastewater treatment facility is located in the City of Oakley. ISD provides sewage collection, treatment and disposal for the City of Oakley, Bethel Island and areas outside of the Oakley City limits. In 2011, ISD constructed a new wastewater treatment plant that increased treatment and disposal capacity to 4.3 mgd, with an ultimate capacity of 6.8 mgd. The wastewater treatment facility provides a nitrified, disinfected, tertiary effluent. Effluent disposal consists of agricultural irrigation on Jersey Island and on property adjacent to the wastewater treatment plant and discharge into the San Joaquin River. The tertiary treated wastewater can provide recycled water suitable for agricultural irrigation, landscape irrigation, and/or industrial uses, once users are identified.

Table 6-2R: 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?	Volume of Wastewater Collected in 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? (optional)
Mt. View Sanitary District	Metered	1,330	Mt. View Sanitary District	MVSD Wastewater Treatment Plant	Yes	No
Delta Diablo	Metered	13,670	Delta Diablo	Delta Diablo Wastewater Treatment Plant	Yes	No
Central Contra Costa Sanitary District	Metered	43,800	Central Contra Costa Sanitary District	CCCSD Wastewater Treatment Plant	Yes	No
Ironhouse Sanitary District	Metered	2,700	Ironhouse Sanitary District	ISD Wastewater Treatment Plant	Yes	No
Total Wastewater Collected from Service Area in 2015		61,500				

Table 6-3W: Wastewater Treatment and Discharge Within Service Area in 2015

☒	Wholesale supplier does not provide supplemental treatment to recycled water it distributes. The supplier will not complete the table below.								
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does this Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 Volumes			
						Waste-water Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area

NOTES: (a) See **Table 6-3R** for information on wastewater agencies located within the boundaries of CCWD's total service area.

Table 6-3R: Wastewater Treatment and Discharge Within Service Area in 2015

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does this Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 Volumes			
						Waste-water Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
MVSD Wastewater Treatment Plant	Peyton Slough Marsh Complex	Effluent flows through a series of marshes to Peyton Slough and ultimately the Carquinez Straight	Wetlands	No	Secondary, Disinfected - 23	1,326	1,326	1,326	0
CCCSD Wastewater Treatment Plant	Suisun Bay	Submerged outfall into Suisun Bay	Bay or estuary outfall	Yes	Secondary, Disinfected - 23	36,622	34,830	1,792	0
Delta Diablo Wastewater Treatment Plant	New York Slough	New York Slough is part of the San Joaquin River	River or creek outfall	No	Secondary, Disinfected - 23	13,670	7,820	7,370	0

Table 6-3R: Wastewater Treatment and Discharge Within Service Area in 2015

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does this Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 Volumes			
						Waste-water Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
ISD Wastewater Treatment Plant	Jersey Island; San Joaquin River	Agricultural irrigation on lands of Jersey Island and discharge to the San Joaquin River	Land disposal	Yes	Secondary, Disinfected - 23	2,700	0	0	2,700
TOTAL						54,318	43,976	10,488	2,700

NOTES:

(a) This table presents the four wastewater agencies that are located within CCWD's total service area.
 (b) Discharged and recycled volume (combined) exceeds volume of wastewater treated for Delta Diablo Wastewater Treatment Plant due to blowdown from an industrial recycled water user that returns to the back of the plant, is combined with wastewater effluent, and not metered separately.

6.5.3. Recycled Water System

CWC 10633

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

6.5.3.1. Central Contra Costa Sanitary District

In November 1995, CCCSD and CCWD reached a project specific agreement for CCCSD to purvey recycled water to areas of Martinez, Concord, and Pleasant Hill, referred to as Zone 1. Sixty-one customers were identified in the agreement as potential recycled water users. CCCSD purveys about 700 AFY (0.6 mgd) of recycled water to over 50 customer sites within CCWD's service area, which include golf courses, a community college, school ball fields, parks and medians, a concrete recycling and batch plant, a woodchip and topsoil farm, a truck washing facility, and the Contra Costa County Animal Shelter where recycled water is used outside for both landscape irrigation and inside the buildings for kennel wash-down, and commercial businesses. The animal shelter is the first dual plumbed facility in the CCWD service area. Average day demand in a dry year for recycled water identified in the project specific agreement is approximately 1,630 AFY (1.5 mgd). CCCSD also uses almost 1,090 AFY (1 mgd) of recycled water internally at its own facilities for process water at its wastewater treatment plant and for landscape irrigation. In 2004, CCCSD and CCWD established a maintenance services agreement under which CCWD provides maintenance and repair services for CCCSD's recycled water pipeline distribution system. The remainder of CCCSD's treated effluent, not sent to Recycled Water facilities, is discharged to Suisun Bay, immediately adjacent to and hydraulically connected to the Sacramento-San Joaquin Delta, where, at times, it can provide a beneficial use.

6.5.3.2. Mt. View Sanitary District

In 1974, MVSD constructed wetlands as a water reclamation project in response to the Clean Water Act. As plant flows increased, the original acreage of wetlands has increased to 151 acres of constructed and natural marshland providing wastewater disposal. Current and planned operations of tidegates located along Peyton Slough by others, have eliminated the dependence of the additional 130 acres on MVSD effluent. Moorhen Marsh is a 21-acre constructed wetland and was the first on the West Coast to use treated effluent as its primary water source. McNabney Marsh (formerly known as Shell Marsh) is a 130-acre restored, tidal wetland located east of I-680, dominated by water from Carquinez Strait. The marsh complex is an important stop over along the Pacific Flyway and a number of species use the wetlands as nesting habitat including American Avocet, Black-necked Stilt, Canada Goose, Mallard, Marsh Wren, and Ruddy Duck. All of MVSD's effluent is directed through the marsh system providing a beneficial use through wildlife and wetland enhancement.

6.5.3.3. Delta Diablo Sanitation District

In 2000, DDSD and CCWD reached an agreement for DDSD to purvey recycled water to Delta Energy Center and Los Medanos Energy Center (DEC/LMEC). Tertiary-treated wastewater from DDSD is used for turbine cooling and make-up in cooling towers at the energy facilities. Additional treatment of the tertiary treated wastewater, to comply with the requirements of the Department of Public Health, is done onsite with a 12.8 mgd reclamation plant. CCWD provides DEC/LMEC with up to a 10 mgd backup water supply and water for steam production and

domestic uses. The recycled water facilities were operational by June 2001, and the energy centers were operational by 2002. DDSD also provides recycled water to a number of irrigation customers in the Cities of Antioch and Pittsburg as part of the DEC/LMEC agreement. The total demand for these additional customers is approximately 80 AFY.

In 2004, DDSD and CCWD reached a General Agreement allowing DDSD to provide recycled water to additional users who were not included in the April 2000 agreement. DDSD and the City of Pittsburg completed a facilities plan in January 2005, which focused on developing additional recycled water facilities to provide irrigation supply for municipal parks and the Delta View Golf Course. In 2011, DDSD completed a project that extended recycled water service to provide landscape irrigation to sites in the City of Antioch, including the Lone Tree Golf Course and at parks, playing fields, medians and other green spaces. In 2015, DDSD supplied an average of 7,400 AFY of recycled water to DEC/LMEC and the cities of Pittsburg and Antioch.

In 2010, DDSD received concurrence from the California Department of Public Health that the recycled water facility's tertiary filters could be operated at a higher loading rate and still produce an equivalent water quality of recycled water, effectively increasing the capacity of the filters to 16.2 mgd. In 2014, DDSD obtained a permanent waiver from the San Francisco Bay Regional Water Quality Control Board to allow the facility to operate at the higher loading rate.

Water not recycled directly by DDSD is discharged to the Sacramento-San Joaquin Delta, where it is available for reuse through direct diversion, re-diversion, or as a component of Delta outflow.

6.5.3.4. Ironhouse Sanitary District

All wastewater treated at ISD is currently being recycled via land application to agricultural lands for irrigation purposes. Plans for future wastewater disposal are to apply it for irrigation, discharge it to the Sacramento-San Joaquin Delta, where it is available for reuse or provide it for landscape irrigation, and/or industrial uses, once users are identified.

6.5.4. Recycled Water Beneficial Uses

CWC 10633

(d) (Describe and quantify) 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.

CWC 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 pursuant to this subdivision.

6.5.4.1. Current and Planned Uses of Recycled Water

Following is a description of potential uses of recycled water in the CCWD service area. Most projects would require construction of water treatment and distribution facilities. **Table 6-4W** and **Table 6-4R** quantify current and projected recycled water uses in CCWD's wholesale and retail service areas, respectively. Recycled water supply availability was assumed to be constant in normal, dry, and multiple dry year scenarios.

Agricultural Irrigation

ISD currently applies treated wastewater for agricultural irrigation in the vicinity of their treatment plant and on Jersey Island in the Sacramento-San Joaquin Delta. Besides the agricultural irrigation performed by ISD, expansion of recycled water for agricultural irrigation use is limited in the CCWD service area due to the lack of available agricultural lands.

Urban Landscape Irrigation

These projects could supply recycled water for landscape irrigation. Potential irrigation sites include parks, schools, golf courses, median strips, business parks, and homeowner's associations. Urban landscape irrigation projects have been implemented in CCWD's service area in coordination with DDS, CCCSD, and ISD. Additional projects could be located in Central Contra Costa County, Pittsburg/Antioch, and East Contra Costa County. The City of Concord's Reuse Plan to develop the former CNWS site is a significant opportunity to maximize the use of recycled water for urban irrigation.

Wildlife Habitat Enhancement and Wetlands

Treated wastewater from MVSD currently enters a series of marsh wetland habitats managed by MVSD. As population within the MVSD service area increases, treated effluent entering the marshland system will also increase. At build-out, average dry weather flows to MVSD are estimated to increase from 2 mgd to 3.2 mgd. Additional opportunities for wildlife enhancement and wetlands using treated wastewater are limited and have not been identified at this time. DDS is also currently providing recycled water to the Dow wetlands in Pittsburg.

Industrial Reuse

These projects could supply highly treated recycled wastewater to select industrial customers for process and cooling purposes. Industries typically demand very high quality water, requiring tertiary and sometimes de-mineralized treatment and nutrient removal. Potential customers include the Tesoro and Shell oil refineries, power plants and other manufacturing facilities. Other uses of recycled water being considered include construction dust control, sewer line cleaning, and other appropriate construction-related uses.

Groundwater Recharge and Indirect Potable Reuse

No economically feasible alternatives for using recycled water for groundwater recharge and indirect potable reuse have been identified within CCWD's service area. Generally, groundwater within CCWD's service area is not suitable for municipal, industrial or irrigation uses, or has limited use potential because of water quality (including high salinity, hardness, boron concentrations and other factors). Aquifers that are used are not overdrafted and recharge regularly.

ISD recently completed a feasibility study in which one of the alternatives evaluated was direct or indirect potable reuse into the Contra Costa Canal to augment surface water supplies. This alternative is currently not feasible because there is no regulatory framework for this recycled water use. However, this alternative could be considered in the future once regulatory guidelines are developed. Although no feasible potable reuse projects have been identified, treated wastewater discharged from CCWD's service area is returned to the Delta or to Suisun Bay and provides a beneficial reuse via redirection by others or as an increment of Delta outflow.

Table 6-4W: Current and Projected Retailers Provided Recycled Water Within Service Area

Name of Receiving Supplier or Direct Use by Wholesaler	Level of Treatment	2015	2020	2025	2030	2035	2040
DDSD/City of Pittsburg	Tertiary	500	700	700	700	700	700
DDSD/City of Antioch	Tertiary	100	300	500	500	500	500
CCWD's Retail Area ^(b)	Tertiary	8,660	13,990	14,860	15,730	16,530	16,620
TOTAL		9,200	14,990	16,060	16,930	17,730	17,820

NOTES:

(a) Wholesale recycled water supplies offset a wholesale demand for CCWD.

(b) For the purposes of the UWMP, and for consistency of accounting and data analyses, CCWD's retail area is included in CCWD's wholesale area. Recycled water use in CCWD's Retail Area is broken down in **Table 6-4R**.

Table 6-4R: Current and Projected Recycled Water Direct Beneficial Uses within Service Area

Name of Agency Producing (Treating) the Recycled Water		CCCSD, DDSD, MVSD						
Name of Agency Operating the Recycled Water Distribution System		CCCSD, DDSD, MVSD						
Supplemental Water Added in 2015		0						
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040
Landscape irrigation – CCCSD Zone 1	Parks and medians	Tertiary	300	340	400	460	540	620
Landscape irrigation – Concord Reuse Plan (CCCSD)	Parks, medians, residential	Tertiary	0	500	1,300	2,100	2,800	2,800
Golf Course irrigation – CCCSD Zone 1	Two golf courses	Tertiary	360	360	360	360	360	360
Commercial use – CCCSD Zone 1	Animal shelter	Tertiary	50	60	60	70	90	100
Industrial use – DEC/LMEC (DDSD)	DEC/LMEC	Tertiary	6,620	8,000	8,000	8,000	8,000	8,000
Industrial use – refinery project (CCCSD)	Cooling towers	Nitrified, Tertiary	0	3,400	3,400	3,400	3,400	3,400
Wetland and wildlife habitat (MVSD)	150 acres of wetlands	Secondary, Disinfected - 23	1,330	1,330	1,340	1,340	1,340	1,340
TOTAL			8,660	13,990	14,860	15,730	16,530	16,620
NOTES:								
(a) Retail recycled water supplies offset a retail demand for CCWD.								
(b) For the purposes of the UWMP, and for consistency of accounting and data analyses, CCWD's retail area is included in CCWD's wholesale area, as shown in Table 6-4W .								
(c) Per DWR guidebook, CCCSD plant use (approximately 1,000 AFY) is not included.								

6.5.4.2. Planned Versus Actual Use of Recycled Water

CWC 10633

(e) (Provide) a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

CCWD's 2010 UWMP projected recycled water use in 2015 for both its wholesale and retail customers. Recycled water use is categorized in this UWMP as retail or wholesale based on what type of demand the recycled water supply offsets. Also, for the purposes of data consistency and accounting, wholesale recycled water use includes retail recycled water use. Wholesale customer use was projected to be 10,810 AF in 2015, of which the retail portion of that use was projected to be 10,260 AF. In 2015, actual wholesale recycled water use was 9,210 AF, of which 8,660 AF was actual retail recycled water use. Actual 2015 recycled water use for CCWD's wholesale and retail customers was 1,600 AF less than what was projected in the 2010 UWMP. This difference is mainly due to less irrigation projects being implemented than anticipated and lower flows available for wetland/wildlife habitat as a result of drought conditions. **Table 6-5W** and **Table 6-5R** provide a comparison of the 2010 UWMP projection for 2015 recycled water use to actual 2015 use for wholesale and retail customers, respectively.

Table 6-5W: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual

Name of Receiving Supplier or Direct Use by Wholesaler	2010 Projection for 2015	2015 Actual Use
DDSD/City of Pittsburg ^(b)	470	470
DDSD/City of Antioch ^(b)	80	80
CCWD's Retail Area ^(c)	10,260	8,660
TOTAL	10,810	9,210

NOTES:

(a) Wholesale recycled water supplies offset a wholesale demand for CCWD.

(b) DDSD/City of Pittsburg and DDSD/City of Antioch 2010 projection was included in "Irrigation" category in Table 5-3 of the 2010 UWMP.

(c) For the purposes of the UWMP, and for consistency of accounting and data analyses, CCWD's retail area is included in CCWD's wholesale area. Recycled water used in CCWD's Retail Area is broken down in **Table 6-5R**.

(d) Per DWR guidebook, CCCSD plant use (approximately 1,000 AFY) is not included.

Table 6-5R: 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.	
Name of Receiving Supplier or Direct Use by Wholesaler	2010 Projection for 2015	2015 Actual Use
Agricultural irrigation	0	0
Landscape irrigation (excluding golf courses)	1,370	300
Golf course irrigation ^(b)	Included in landscape irrigation	360
Commercial use ^(b)	Included in landscape irrigation	50
Industrial use	6,380	6,620
Geothermal and other energy production	0	0
Seawater intrusion barrier	0	0
Recreational impoundment	0	0
Wetland and wildlife habitat	2,510	1,330
Groundwater recharge (IPR)	0	0
Surface water augmentation (IPR)	0	0
Direct potable reuse	0	0
TOTAL	10,260	8,660
NOTES: (a) Retail recycled water supplies offset a retail demand for CCWD. (b) Projection for golf course irrigation and commercial use was included in "Irrigation" category in Table 5-3 of the 2010 UWMP. (c) Per DWR guidebook, CCCSD plant use (approximately 1,000 AFY) is not included.		

6.5.5. Actions to Encourage and Optimize Future Recycled Water Use

CWC 10633

(f) (Describe the) 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 AF of recycled water used per year.

(g) (Provide 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.

Authority for the Recycled Water Program was established by the adoption of the Contra Costa Water District Strategic Plan by the Board of Directors in February 1989. In addressing issues regarding development of new markets, the Board adopted a policy statement to develop a market for recycled water in Central and Eastern Contra Costa County. Subsequently, the Board adopted Resolution No. 90-79 declaring certain policies in regard to recycled water that included: "CCWD will implement recycled water projects which are financially viable, provide beneficial use and are consistent with appropriate legal, public health and environmental requirements."

Since 1988, CCWD has completed and participated in a number of studies, demonstration projects, pilot testing programs and business plans to verify the feasibility of using recycled water within the CCWD service area. CCWD has agreements with CCCSD and DDSD regarding specific projects that provide recycled water supplies for industrial uses and landscape irrigation. DWR Table 6-6R is a summary of actions taken to increase or encourage the use of recycled water within CCWD's total service area. Further discussion of the actions is provided in **Table 6-6R** below.

Table 6-6R: Methods to Expand Future Recycled Water Use

Name of Action	Description	Implementation Year	Expected Increase in Recycled Water Use
Agreements and collaboration with CCCSD	• Recycled Water for Landscape Irrigation (Zone 1) • Project Specific Agreement for Recycled Water • Maintenance services agreement • Wholesale agreement • Industrial recycled water project	• April 1995 • November 15, 1995 • November 5, 2004 • 2018 • By 2020	Agreement is for up to 1,630 AFY dry year total. Expected increase is 375 AFY based on CCCSD's planned projects. Up to 3,400 AFY

Table 6-6R: Methods to Expand Future Recycled Water Use

Name of Action	Description	Implementation Year	Expected Increase in Recycled Water Use
Collaboration with City of Concord on future development	• CCWD collaborated with City of Concord on the Community Reuse Plan to develop the former Concord Naval Weapons Station to incorporate significant recycled water	• 2020 - 2040	Up to 2,800 AFY
Agreements and collaboration with DDSD	• DEC/LMEC power projects • General agreement for recycled water for additional users • Recycled Water Master Plan	April 2000 June 16, 2004 January 2013	Agreement is for up to 8,000 AFY for DEC/LMEC Agreement is for up to 1,654 AFY for additional users. Expected increase is 600 AFY based on DDSD's planned projects.
Participation in East Contra Costa County Regional Industrial Recycled Water Facilities Plan	• Partners included: CCWD, CCCSD, DDSD, ISD, Pittsburg, Antioch, PG&E, Mirant Corporation • Purpose was to evaluate the feasibility of implementing regional industrial recycled water projects in the Pittsburg/Antioch industrial corridor	October 2009	Evaluated projects up to 8 mgd (9,000 AFY) but depends on industrial growth and/or needs
Cooperation with Ironhouse Sanitary District	• ISD Recycled Water Feasibility Study, in which one of the alternatives evaluated involves potable reuse to Contra Costa Canal	July 2015	Up to 6.8 mgd (7,600 AFY) but depends on growth, cost, and regulatory framework for indirect potable reuse (IPR)/direct potable reuse (DPR)
Regional Planning	• Leadership role in East Contra Costa County Integrated Regional Water Management Group	Since 2005	Varies

Table 6-6R: Methods to Expand Future Recycled Water Use

Name of Action	Description	Implementation Year	Expected Increase in Recycled Water Use
Financial Incentives	- Coupons for car washes that use recycled water - Recycled water fill stations within service area	Since 2010	10 AFY
Fill stations provided by CCCSD, DDSD, and ISD		Since 2014	30 AFY
TOTAL			7,200 AFY

NOTES:

(a) Car wash volume estimated at 500 customers at 50 gallons per day.

(b) Recycled water fill station based on average of 150 fills at 200 gallons per day.

(c) Total includes expected increase only (not existing uses) and does not include Pittsburg/Antioch industrial use, ISD DPR, and ECCC IRWM since those projects vary and depend on factors outside of CCWD's purview.

On November 2, 1994, CCCSD and CCWD and on June 16, 2004, DDSD and CCWD executed general recycled water agreements whereby both districts can develop a joint project or, each district can develop its own individual project(s) by cooperating with the other agency in planning, design, and construction activities. The agreements are intended to address and resolve legal issues, namely duplication of service, arising from the purveying of recycled water by a sanitation district in CCWD's service area. In 2009 CCCSD terminated the General Agreement between CCWD and CCCSD that was adopted in 1994. CCWD and CCCSD continue to evaluate recycled water projects on a case-by-case basis. CCWD has collaborated with CCCSD and the City of Concord to maximize the use of recycled water for the development of the former CNWS and are evaluating expanding recycled water service to major industrial users in the area.

6.5.5.1. Regional Planning

The East Contra Costa County Integrated Regional Water Management (IRWM) group consists of twelve members including CCWD, DDSD, and ISD. CCWD provides a leadership role in the IRWM group by coordinating grant applications and administration. CCWD currently administers the Proposition 84 IRWM grant from the State Water Resources Control Board that includes approximately \$450,000 in funding towards two recycled water master plans and feasibility studies in DDSD and ISD's service areas. In the latest round of Proposition 84 grant funding opportunities from the California Department of Water Resources, CCWD, on behalf of the East Contra Costa County IRWM group, was awarded \$667,000 in grant funding for one conservation project and two recycled water projects for recycled water pipeline construction in the City of Brentwood and DDSD's recycled water fill station and back-up generator to ensure reliable recycled water deliveries.

6.5.5.2. Financial Incentives

CCWD provides customers with money-saving coupons for discounts at local car washes that recycle water. Car washes that recycle water can use 50 percent less water compared to washing with a hose. Currently there are more than ten local car wash establishments participating in the Smart-Wash Car Wash Coupon Program. In addition, the District provides rebates to encourage commercial car wash establishments to install recycling systems. Rebates are determined on a case-by-case basis.

CCCSO constructed and implemented a residential recycled water fill station in 2014 at their Household Hazardous Waste Facility in Martinez. CCCSO offers free recycled water to residential customers which can be used for hand watering of lawns, gardens, and shrubs. In 2015, ISD officially opened a Residential Recycled Water Fill Station at its headquarters in Oakley to allow Oakley and Bethel Island residents free access to available recycled water. DSD also conducted a pilot residential recycled water fill station in 2015.

6.5.5.3. Future Development

The City of Concord Community Reuse Plan (Reuse Plan) proposes to redevelop approximately 5,000 acres of the CNWS, which is located within CCWD's treated water service area. CCWD staff worked with the City of Concord throughout the planning process to incorporate significant water conservation measures, low water demand development, and recycled water standards into the CNWS Reuse Plan. These standards have reduced the project's potable water demand projections by more than 50 percent. It is estimated that the project will utilize recycled water in an amount equal to or greater than the net potable water demand. There are also opportunities to provide up to an additional 3,000 AFY of recycled water if the planned open spaces and parks are irrigated. CCWD will continue to work collaboratively with municipalities in the CCWD service area to encourage recycled water use in future development projects.

The projected results from the above actions will continue to increase the use of recycled water within the CCWD service area, as indicated in **Table 6-4W** and **Table 6-4R**.

6.5.5.4. Recycled Water Optimization Plan

CCWD fully supports cost-effective conservation and recycled water projects and believes that recycling is an essential water management strategy to help sustainably secure the state's water future. However, the benefits derived from recycling projects vary by region and depend on many factors that need to be carefully considered. CCWD is located within the statutory limits of the Sacramento-San Joaquin Delta, or immediately adjacent thereto and conveniently served with water there from. Drainage and wastewater from CCWD's service area is returned to the Delta or to the Suisun Bay. Consequently, a large fraction, and at times all, of the wastewater from CCWD's service area is put to beneficial use (rediversion by others or as an increment of Delta outflow). As such, recycling wastewater within CCWD, while improving water use efficiency, does not provide a one-to-one statewide benefit in water supply as would recycling water of Delta origin that would otherwise be discharged to the ocean or a salt sink.

Greenhouse gas (GHG) emissions provides another example of how the benefits derived from a recycled water project can vary substantially depending on the location of the project and whether recycled water replaces untreated or treated (potable) water supplies. The Global Warming

Solutions Act of 2006 (AB32) requires the California Air Resources Board to develop regulations and market mechanisms to reduce California's GHG emissions to 1990 levels by 2020, representing a 25 percent reduction statewide, with mandatory caps beginning in 2012 for significant emissions sources. Water recycling can reduce GHG emissions in locations that import water supplies over a long distance with high lifts using significant amounts of energy to run pumps (for example, from the Delta to Southern California); however recycling locally in close vicinity to the Delta can increase GHG emissions compared to surface water diversions in some cases. Net water supply benefits and GHG emissions are important factors in consideration of new recycled water facilities.

CCWD coordinates with local wastewater agencies to develop future reclaimed water projects and project specific agreements. Due primarily to high initial costs, potential GHG implications, and lack of water supply benefit in times of shortage, CCWD has not developed permanent recycled water projects. Given these constraints and the statewide goals for reduction in water use and GHG emissions, CCWD encourages conservation for existing customers and optimization of recycled water for new development where recycled water offsets potable water demands. The planned development of the CNWS presents the most significant opportunity for a well-designed, fully integrated and cost-effective recycled-water use within CCWD's service area.

CCWD is also working in collaboration with CCCSD to evaluate the feasibility of providing recycled water to major industrial customers within the service area. The Industrial Recycled Water Project could serve up to 3 mgd of recycled water, offsetting a like amount of Delta diversions, and has potential to increase over time depending on cost, water quality, and industrial demand.

When evaluated over time and in the context of costs and benefits of other water supplies, these parameters may change. Potential recycled water projects will continue to be re-examined as a potential source over time or as new technology becomes available.

6.5.5.5. Dual Distribution Systems

The installation of dual distribution system piping during construction of new development is a means to minimize the costs of recycled water projects. On March 27, 1991, the Contra Costa County Board of Supervisors passed a "Dual Water Systems" Ordinance providing procedures for "county cooperation with public water and wastewater agencies within the County's unincorporated area in the development of projects to incorporate dual water systems whenever feasible and consistent with applicable legal, public health, safety and environmental requirements."

CCWD coordinated with the City of Concord to prepare the CNWS Reuse Plan, which will incorporate a dual distribution system to facilitate future recycled water use.

6.6. Desalinated Water Opportunities

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(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.

CCWD, in partnership with five other major Bay Area water agencies, including Alameda County Water District (ACWD), Zone 7 Water Agency (Zone 7), EBMUD, San Francisco Public Utilities Commission (SFPUC), and Santa Clara Valley Water District (SCVWD), jointly developed a regional brackish water desalination pilot project (Bay Area Regional Desalination Project or BARDP) to evaluate ways to improve the region's water supply reliability, especially during droughts and emergencies. In 2007, the agencies completed a Feasibility Study, which identified three potential Bay Area locations for a regional desalination project. A pilot study was conducted in 2009-2010 at CCWD's Mallard Slough Pump Station that demonstrated that desalination is technically feasible, pending further development of institutional and other technical issues related to environmental impacts, water rights and water conveyance. Through 2014, the partners performed site-specific hydraulic studies to determine available capacity in transmission lines, water quality changes, and storage optimization options. A broader coalition of Bay Area water agencies is currently evaluating the project as part of a regional reliability study. Desalination will continue to be evaluated as a potential water supply alternative as part of the District's regular updates to its long-range water supply planning.

6.7. Exchanges or Transfers

CCWD has experience implementing water transfers, and continues to evaluate opportunities for transfers in the future.

6.7.1. Past Transfer Agreements

In the year 2000, CCWD entered into an agreement with ECCID in 2000 to purchase surplus irrigation water to be used for M&I purposes in ECCID's service area. Only a portion of ECCID is within the existing CCWD service area (estimated current demand of 6,000 AFY). The current ECCID agreement allows CCWD to purchase up to 8,200 AFY for service in the areas common to both districts. The agreement also includes an option for up to 4,000 AFY of groundwater (by exchange) when the CVP is in a shortage situation. The groundwater exchange water was utilized during the 2007-2009 drought. This exchange water can be used anywhere within CCWD's service area. Water delivered by CCWD to the City of Brentwood is purchased by the City from ECCID under a separate contract.

In addition, CCWD purchased approximately 3,400 AF of water from Western Water in 2000 and 5,000 AF from the Yuba County Water Agency each year in 2003 and 2004. The goal of these short-term transfers was to establish relationships with sellers, work through the various institutional issues associated with transfers before a serious water shortage occurs, and to develop water transfer agreements that would allow CCWD to purchase water in shortage years.

The District also purchased 2,000 AF of transfer water from Woodbridge Irrigation District in 2013. This supply was conveyed through the CCWD-EBMUD intertie, which was constructed in 2007.

CCWD has recent experience implementing pilot projects demonstrating the feasibility of providing drought water supply reliability to Bay Area partner agencies in a cost-effective

manner. In 2014, CCWD transferred 5,000 AF of previously stored water to Alameda County Water District, and 1,700 AF of previously stored water to Byron Bethany Irrigation District.

6.7.2. Potential Transfer Opportunities

Potential water transfer opportunities include spot market purchases and long-term transfer agreements, discussed below.

6.7.2.1. Spot Market Purchases

Spot market purchases are made on a year-to-year basis, as needed. In the 1980s and 1990s, nearly three-quarters of all transfers were short-term or spot transfers. However, they now account for less than half of all flows and a quarter of total volumes committed. This is due, in large part, to the number of high-volume transfers between State Water Project, Central Valley Project, and Colorado River Project contractors, as well as the increase in the number and amount of transfers for environmental purposes.

According to the Public Policy Institute of California (PPIC, 2012a), over the last 20 years, the total volume of water transfers has grown significantly; since 2005, annual totals have varied from 1.2 million acre-feet (MAF) to 1.7 MAF. However, only a small portion of this amount is available on the open market. For instance, in 2011, total transfers were 1.4 MAF, while only 294,796 AF of that amount was available on the open market. The remainder of the total was from direct government purchases and transfers among the Central Valley Project contractors, State Water Project contractors, and Colorado River Project contractors. Of the 1.4 MAF of transferred water in 2011, 465,635 AF were short-term transfers and 696,379 AF were long-term transfers, while the remaining amount was permanent flows or flows that were otherwise committed. Additionally, California is currently experiencing its fourth year of drought, and current spot market purchase prices are reportedly in the range of \$300-\$700/AF. The PPIC study along with current spot market conditions point to the increasing scarcity of and competition for spot market water supplies.

In order to participate in the spot market, the District would determine its water supply requirements each year and decide whether to purchase additional supplies. This alternative allows for purchasing only the amount of water needed, when it is needed. However, it offers no long-term reliability.

The District's experience in implementing short-term water transfers has resulted in establishment of relationships with sellers and gained experience with contractual and institutional aspects of spot market purchases.

Many agricultural districts in Northern California participate in spot market purchases each year, so if necessary, the District could pursue additional short-term transfers with these agencies. Up to 400,000 AF of spot market supplies have historically been available from suppliers located north of the Bay-Delta each year. It is expected that single purchases would be available in quantities ranging from 5,000 AFY to 30,000 AFY (6,000 AFY was assumed for costing purposes based on CCWD's future dry year shortfall). The available quantity in any particular year is unknown since it depends on the current market conditions. As more buyers enter the market, the availability of annual supplies will likely decline.

6.7.2.2. Long-Term Transfer Agreements

In contrast to short-term transfers, CCWD could consider entering into a long-term water transfer agreement for a fixed amount of annual water supplies. The benefit of entering into a long-term supply agreement in the near term is that the uncertainty in the availability and cost of long-term transfers is expected to increase significantly in future years – long-term transfers may become unavailable or prohibitively expensive in future years.

Developing an agreement for pre-1914 water supplies would provide the highest reliability for this option since pre-1914 water rights allocations are typically the last to be reduced in extremely dry years. In February 2000, CCWD and ECCID entered into an agreement for ECCID to transfer surplus irrigation water of up to 8,200 AFY to CCWD as a long-term water transfer. The current agreement also allows CCWD to purchase up to 4,000 AFY of groundwater via exchange when the CVP is in a shortage situation.

In the past, CCWD has been approached by the Church of Latter Day Saints to lease pre-1914 supplies. As such, they are the most likely supplier for this type of arrangement. In addition, supplies may be able to be secured from Western Water.

Potential long-term transfer agreements could be pursued with a variety of potential sellers. Additional coordination with all these agencies would be required to determine the exact amount of transfer water potentially available from these opportunities.

Long-term Agricultural Water Exchange - Fallowing

Another potential transfer opportunity could involve partnering with an agricultural partner, such as a large agricultural water user or irrigation district, to exchange supplies in dry years either by fallowing land or shifting crops to conserve water for other uses. A fixed quantity of supplies would be made available to CCWD annually or in dry years through this arrangement. If this additional supply created a supply surplus in wet or normal years, those surplus supplies could be banked through groundwater storage or remarketed if the opportunity exists.

The Metropolitan Water District of Southern California has such an agreement in place with the Palo Verde Irrigation District for a land fallowing, crop rotation, and water supply program.

Long-term Agricultural Water Exchange – Conjunctive Use

In contrast to a transfer agreement based on fallowing, CCWD could potentially partner with a willing agricultural partner or irrigation district north of the Delta which has both pre-1914 surface water supplies and access to groundwater supplies. In dry years, the agricultural district could shift its water usage to local groundwater supplies and transfer its surface water allocation to CCWD. Developing this type of program would require that the agricultural district have wells to produce groundwater supplies, and CCWD may be required to co-invest in drilling new wells and/or other infrastructure needed for a conjunctive use program. Once in place, CCWD would be able to call on dry year supplies as necessary from the agricultural district.

6.7.3. Bay Area Regional Reliability

The District together with seven other Bay Area water agencies, including ACWD, Bay Area Water Supply and Conservation Agency (BAWSCA), EBMUD, Marin Municipal Water District (MMWD), SFPUC, SCVWD, and Zone 7, are participating in the BARR effort to improve water supply reliability in the Bay Area. Benefits of regional approach include: leveraging existing infrastructure investments, facilitating the transfer of water during shortages, bolstering emergency preparedness, and improving climate change resiliency.

6.8. Future Water Projects

As part of its recent FWSS analysis, CCWD compiled and assessed a comprehensive list of supply alternatives based on supplies considered in the 1996 FWSS, 2007 FWSS review, 2005 Water Transfer Alternatives Analysis, recycled water master plans, groundwater management plans, urban water management plans, and other local and regional planning documents. Pre-screening conditions were applied to develop a meaningful range of potential water supply options. Supply alternatives are generally categorized as conservation, recycled water, groundwater, desalination, or water transfers.

It is anticipated that CCWD will implement the following supply options in the future. Together, these projects will achieve a total of 24,000 AFY of dry year supply by the year 2060 to address the District's projected shortfalls.

- **Near-Term Projects to Achieve SB X7-7 Water Use Reductions:** CCWD estimates that it will be required to reduce water use from the regulatory baseline period by approximately 6,400 AFY to meet its SB X7-7 per capita water use targets. The water use efficiency improvements will be accomplished through implementation of enhanced conservation (3,000 AFY by 2020) and recycled water projects to achieve the required reductions. CCWD is pursuing an Industrial Recycled Water Project to serve up to 3,400 AFY to major industrial customers. The timing and scope of the recycled water project will depend on the level of rebound and overall water use within CCWD's service area.
- **Long-Term Water Use Efficiency Measures:** CCWD will continue to implement enhanced conservation to maintain the per capita water use required by SB X7-7 into the future. To do so, the District will implement – in addition to the 6,400 AFY generated by the Near-Term projects to Achieve 20x2020 Water Use Reductions – an additional 8,800 AFY by the year 2060. The precise mix of conservation and reuse projects implemented to achieve the 8,800 AFY will depend upon the most cost-effective alternatives over time.
- **New Dry Year Supplies to Meet Projected Shortfalls:** Assuming anticipated passive conservation savings is realized in the future, and all planned water use efficiency projects (conservation and recycled water) are implemented, the District anticipates no supply shortfalls until the year 2040, and at that time only under multiple-year drought conditions. This also assumes that the CCWD will abide by its current Board policy of meeting 100 percent of demand during normal years and at least 85 percent of demand during drought

conditions, with 15 percent being met through customer response to short-term DMMs. The recommended new dry year supply alternatives – the alternatives providing the greatest benefit at lowest unit cost as dry year options – are the Long-Term Water Right Transfer (if resale opportunities and revenue are identified), Spot Market, Long-Term Agricultural Conjunctive Use, and Long-Term Agricultural Fallowing alternatives. CCWD evaluates its long-term supply and demand outlook every five years. As 2040 approaches, the need as well as the relative benefits and costs of various alternatives will shift; as such, CCWD will continue to evaluate its preferred alternatives over time to determine which is most preferred as the need draws closer.

Table 6-7W and **Table 6-7R** below summarize the future supply projects that will increase the District’s supply for its wholesale operations and retail operations, respectively.

Table 6-7W: 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 narrative format.					
6-28 & 6-29	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency
Industrial Recycled Water Project	Yes	CCCSD	Project will deliver recycled water from CCCSD to major industrial customers	2018-2020	Average year	500 – 3,400 AFY
CCWD Active Near-Term Conservation Program	No		Ongoing investments in active conservation programs to achieve 20x2020 target	2020	Average year	3,000 AFY
CCWD Active Long-Term Conservation Program	No		Ongoing investments in active conservation programs to maintain 20x2020 target	2020-2060	Average year	Up to 8,800 AFY
Long-term water transfer or other preferred alternative	No		Project to meet multiple-dry year shortfall projected to begin in 2040	2030-2040	Multiple-dry	1,700 AFY

Table 6-7W: Expected Future Water Supply Projects or Programs

NOTES:

(a) This table reflects future water projects that benefit CCWD's total service area, including both retail and wholesale customers.

(b) CCWD evaluates its long-term supply and demand outlook every five years. As 2040 approaches, the need as well as the relative benefits and costs of various supply alternatives will shift; as such, CCWD will continue to evaluate its preferred alternatives over time to determine which is most preferred as the need draws closer.

Table 6-7R: Expected Future Water Supply Projects or Programs

☒	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in narrative format.
6-28 & 6-29	Provide page location of narrative in the UWMP

6.9. Summary of Existing and Planned Sources of Water

While CCWD's primary source of water supply is the CVP, the District also has water rights for the Los Vaqueros Reservoir and at Mallard Slough. In addition, the East Contra Costa Irrigation District, the City of Antioch, and industrial users all have rights to divert water from the Delta. While there are a number of agencies within its service area that use groundwater to meet a portion of their demands, CCWD does not utilize groundwater to meet demands. Recycled water has also been used and its use is projected to increase in the future. **Table 6-8W** and **Table 6-8R** below indicate the amount of water, by supply type, supplied in 2015 for the District's wholesale operations and retail operations, respectively.

Table 6-8W: Water Supplies - Actual

Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume (AFY)	Water Quality
Purchased or Imported Water	CVP	55,330	Raw Water
Surface water	Industrial River Diversions ^(a)	3,400	Raw Water
Surface water	Mallard Slough	0	Raw Water
Surface water	Antioch River Diversions	1,450	Raw Water
Other	Estimated Groundwater	5,240	Raw Water
Transfers	ECCID	7,370	Raw Water
Transfers	ECCID for Brentwood (inside CCWD)	1,860	Raw Water
Supply from Storage	Los Vaqueros Reservoir	29,650	Raw Water
Recycled Water	Industrial, irrigation, and commercial, wetland/wildlife uses	9,260	Recycled Water ^(b)
TOTAL		113,560	

NOTES:

(a) Industrial river diversions is estimated based on average use.

(b) Groundwater represents production from municipal customer owned wells and an estimate of private wells within CCWD's service area.

(c) Recycled water supplies include DEC/LMEC industrial, CCCSD Zone 1, and Cities of Antioch and Pittsburg irrigation, and wetland/wildlife habitat uses. It does not include approximately 1,000 AFY of CCCSD plant use.

(d) Passive and active conservation savings are not included in this table.

Table 6-8R: Water Supplies - Actual			
Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume (AFY)	Water Quality
Other	From CCWD Wholesale Supply	58,840	Raw Water
Recycled Water	Industrial, irrigation, and commercial, wetland/wildlife uses	8,650	Recycled Water ^(b)
TOTAL		67,490^(a)	
NOTES: (a) CCWD's retail supply in 2015 is equal to total retail demand, including losses as shown in Table 4-1R. (b) Recycled water supplies includes DEC/LMEC industrial, CCCSD Zone 1, and wetland/wildlife habitat uses. It does not include approximately 1,000 AFY of CCCSD plant use. (c) Passive and active conservation savings are not included in this table.			

Table 6-9W and **Table 6-9R** below indicate, by supply type, the total amount of projected supply for the District's wholesale operations and retail operations, respectively. These tables show projected reasonably available supply in five-year increments from 2020 through 2040.

Table 6-9W: Water Supplies - Projected

Water Supply	Additional Detail on Water Supply	Projected Water Supply (Reasonably Available Volume in AFY)				
		2020	2025	2030	2035	2040
Purchased or Imported Water	CVP	179,000	186,300	194,200	195,000	195,000
Surface water	Industrial River Diversions	3,400	3,400	3,400	3,400	3,400
Surface water	Mallard Slough	1,700	1,700	1,700	1,700	1,700
Surface water	Antioch River Diversions	6,400	6,400	6,400	6,400	6,400
Other	Estimated Groundwater	6,500	6,800	7,000	7,300	7,600
Transfers	ECCID Supply	6,800	7,100	7,400	7,700	7,900
Supply from Storage	Los Vaqueros Reservoir	10,000	10,000	10,000	10,000	10,000
Recycled Water	Industrial, irrigation, and commercial uses	15,000	16,000	16,900	17,700	17,800
TOTAL		228,800	237,700	247,000	249,200	249,800

NOTES:

- (a) The CVP conditions used for supply planning are defined as follows: Normal is Adjusted Historical Use. Single Year Drought supply is 75% of Historical Use. Multiple-dry year period year 1, year 2, and year 3 is 85%, 70%, and 60%, of Historical Use, respectively.
- (b) Mallard Slough and Antioch River diversions is based on average annual diversion over ten-year period (2000-2010).
- (c) Groundwater represents production from municipal customer owned wells and an estimate of private wells within CCWD's service area.
- (d) Water supply reliability benefit resulting from expansion of Los Vaqueros Reservoir is based on modeling performed for the project's Environmental Impact Report.
- (e) Recycled water does not include CCCSD plant use.
- (f) Demand projections shown in Section 4 have been adjusted to reflect anticipated reductions due to passive and active conservation savings. Thus, conservation savings are not included as a supply source in this table.

Table 6-9R: Water Supplies - Projected

Water Supply	Additional Detail on Water Supply	Projected Water Supply (Reasonably Available Volume in AFY)				
		2020	2025	2030	2035	2040
Other	From CCWD Wholesale supply	86,500	88,500	90,600	93,300	96,500
Recycled water		14,000	14,900	15,700	16,500	16,600
TOTAL		100,500	103,400	106,300	109,800	113,100

NOTES:

- (a) CCWD does not separate out its retail and wholesale water supplies. Thus, it is assumed that the projected retail supplies are equal to the projected retail demands in normal years.
- (b) Recycled water supplies do not include CCCSD plant use.
- (c) Demand projections shown in Section 4 have been adjusted to reflect anticipated reductions due to passive and active conservation savings. Thus, conservation savings are not included as a supply source in this table.

6.10. Climate Change Impacts to Supply

Climate change is projected to have several impacts to CCWD's water supplies and demands. Changes in local air temperatures, changes in statewide and local precipitation and sea level rise will affect both supplies and demand.

Although the extent of these changes is uncertain, scientists agree that some level of change is inevitable; therefore, it will be necessary to implement flexible adaptation measures that will allow natural and human systems to respond to these climate change impacts in timely and effective ways. Adaptation measures may be implemented in response to climate change impacts that have already occurred, or expected impacts that are projected to occur. Water resource planners already face challenges interpreting new climate change information and discerning which response methods and approaches will be most appropriate for their planning needs.

Surface water diversions in the Delta constitute the largest water supply in the Planning Area. Changes in precipitation and temperatures in the Sierra Nevada region will affect the timing and quantity of tributary flows into the Delta which in turn can affect the availability of fresh surface water. Changes in precipitation patterns could result in less local precipitation and less storage in upstream CVP/State Water Project (SWP) reservoirs which could reduce flows into the Delta. Although some agencies in the CCWD service area are not CVP/SWP contractors, the availability of high quality freshwater in the Delta is heavily dependent on upstream reservoirs operated by CVP/SWP. Therefore, reduction in storage in upstream reservoirs could limit the timing and duration of fresh water in the Delta for all users.

The Los Vaqueros Reservoir is primarily utilized as a blending facility to improve the quality of water delivered to customers in the late summer and fall, when Delta water quality is lowest. If the amount of water stored in Los Vaqueros during summer and fall decreases, this could limit the blending capabilities of the reservoir and the amount available for supply reliability.

In addition to changes in statewide and local precipitation patterns, sea level rise could also limit the availability of fresh water in the Delta. Sea level rise could result in increases in Delta salinity which would further limit the amount and duration of water with quality suitable for municipal and industrial purposes.

7. Water Supply Reliability Assessment

This section describes the long-term reliability of CCWD's water supplies.

7.1. Constraints on Water Sources

CWC 10631

(c)(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.

CWC 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.

Many factors could result in decreased reliability of the District's water supply, including limits on the amount available, water quality, climatic conditions, or a combination of these. The potential constraints for each of the District's sources are summarized in **Figure 7-1** and relate to both wholesale and retail operations. Management strategies for all sources include replacement through an alternative available source, participation in regional reliability efforts, and/or short-term DMMs. All potential impacts are considered in the development of CCWD's water supply reliability analysis provided later in this section. CCWD's Board policy is to meet 100 percent of demand in average (normal) years, and 85 percent of demand during drought conditions, with 15 percent met through customer response to short-term DMMs.

Figure 7-1: Summary of Potential Constraints on CCWD's Supply Sources

CCWD Supply Source	Potential constraint on CCWD's wholesale and retail operations
CVP	CVP supply is subject to reduction during water shortages including regulatory restrictions and drought. The M&I Water Shortage Policy defines the reliability of CCWD's CVP supply and was developed by Reclamation to establish CVP water supply levels that would sustain urban areas during severe or continuing droughts and provide for minimum health and safety. Allocations of 100% are based on an M&I user's contractual amount. Allocations of less than 100% are based on historical use. The M&I Water Shortage Policy provides for a minimum allocation of 75% of adjusted historical use for urban contractors until agricultural contractors' allocations fall below 25%.
Los Vaqueros Storage	Based on modeling done for the LVE Project Environmental Impact Report, up to 10,000 AF can be used in any year to offset previously planned transfer water from other sources. The remaining 30,000 AF would be available to supplement supplies during droughts.
Mallard Slough	Water quality conditions have restricted diversions from Mallard Slough to approximately 3,100 AFY (on average) with none available in dry years.
City of Antioch and Industrial River Diversions	Seawater intrusion and associated high salinity levels limit the use of the intake to times when the Delta outflow is sufficient to maintain salinity at acceptable levels
Recycled Water	Supply is considered to be drought-tolerant, however, deliveries could be subject to operational or water quality upsets.

7.1.1. Constraints on Delta Supply

The quality of water in the Delta, the District's primary source of water, continues to deteriorate despite efforts to improve it. Delta water quality problems are being compounded by increased water use and greater wastewater, storm water and agricultural discharges from statewide development and growth. Changes in precipitation and temperatures could affect the timing and quantity of tributary flows into the Delta which in turn can affect the availability of fresh surface water. Changes in precipitation patterns could result in less local precipitation and less storage in upstream reservoirs which could reduce flows into the Delta, resulting in limits to the timing and duration of fresh water in the Delta.

In addition to changes in statewide and local precipitation patterns, sea level rise could also limit the availability of fresh water in the Delta. Sea level rise could result in increases in Delta salinity which would further limit the amount and duration of water with quality suitable for municipal and industrial purposes.

In recent years, biological opinions have affected the reliability and availability of Delta supplies. For example, on December 15, 2008, the Fish & Wildlife Service issued a biological opinion on the Long-Term Operational Criteria and Plan (OCAP) for coordination of the CVP and SWP. The Service determined that the continued operation of these two water projects, as described in the plan, was likely to jeopardize the continued existence of the delta smelt and adversely modify its critical habitat. Since that determination, pumping has been reduced or curtailed on both projects during critical times to maintain adequate species protection. This and other biological opinions can significantly affect the timing and availability of supplies from the CVP, affecting CCWD's supply availability and reliability.

Actions to address Delta conditions at the state level include the Bay Delta Conservation Plan/California Water Fix (BDCP/CWF). The BDCP/CWF has been under development since 2006 and is intended to reduce the impacts of exporting water from the Delta. CCWD has been an active participant providing comments throughout the development of the BDCP/CWF and evaluating how proposed projects may impact local facilities and operations.

7.1.2. Water Quality and Supply Reliability Improvements

In order to continue providing high quality water for its customers, and meet increasingly stringent drinking water quality standards, CCWD has initiated or is participating in a number of water quality improvement projects.

In 2004, CCWD and EBMUD entered into an agreement to wheel water through the Freeport Regional Water Project facilities. In 2007, the EBMUD-CCWD untreated water interconnection was completed, which connected CCWD's Los Vaqueros Pipeline and the EBMUD's Mokelumne Aqueduct in Brentwood. The intertie enables CCWD to divert up to 3,200 AFY of its CVP supply at the Freeport diversion facility where water quality is better than at CCWD's Delta Intakes. The new intertie also provides for the sharing of water supplies between the agencies during emergency conditions or to support planned maintenance.

Also in 2004, CCWD formed a regional partnership with local water agencies to begin a research project on advanced water treatment processes. The Advanced Treatment Demonstration Project included a full-scale application of new technologies as applied to source water from the Sacramento-San Joaquin Delta. The research examined methods to produce safer drinking water with new and existing disinfectants and advanced filtration. A second phase of the Advanced Treatment Study was initiated to improve understanding of Delta source water quality with respect to levels of various contaminants including endocrine disrupting compounds and pharmaceuticals, and to quantitatively assess removal effectiveness of existing and advanced treatment processes (membrane filtration and chemical addition). The results of the study were documented in a report in March 2011.

In 2010, CCWD completed the Middle River Intake (Alternative Intake Project) to relocate some of its pumping to a new drinking water intake in the Delta. Because water quality varies widely throughout the Delta, the new intake located further east allows CCWD to divert water of higher

quality during dry periods, including droughts. The intake provides CCWD with the flexibility to divert higher quality water from the Delta without increasing the amount of water pumped.

CCWD is also implementing the Canal Replacement Project which consists of lining or encasement of approximately four miles of the Contra Costa Canal from the Rock Slough Intake to Pumping Plant No. 1. The purpose of the project is to improve source water quality at the Rock Slough Intake by hydraulically isolating the high saline groundwater from the Canal. The project will also increase public safety and flood control. The project is being completed in phases and to date, CCWD has completed approximately 1.5 miles of the project. The remaining 2.5 miles will be completed in phases in coordination with project partners and funding.

In 2012, the District completed an expansion to the Los Vaqueros Reservoir, which increased the capacity of the reservoir from 100,000 AF to 160,000 AF. The project improves water quality and water supply reliability for the District's customers while providing a net environmental benefit to the Delta.

7.2. Reliability by Type of Year

CWC 10631

(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.*

Drought planning considers aggregated water supplies from all sources during single-dry and multiple-dry years, defined by the DWR Guidebook as follows:

- **Average Year:** Defined as the year that most closely represents the average water supply available.
- **Single-Dry Year:** Defined as the year that represents the lowest water supply available.
- **Multiple-Dry Year:** Defined as the period that represents the lowest water supply available for a consecutive 3-year period.

Table 7-1W and **Table 7-1R** below indicate the estimated total water supply in each year type for wholesale and retail operations, respectively. CCWD's retail TWSA is included as a wholesale customer of CCWD. Thus, the reliability of CCWD's retail operations are the same as the reliability of CCWD's wholesale operations.

To determine the supply available in each year type, the following key assumptions were made:

- CVP supply is 100 percent of historical use in average years; 75 percent of historical use in single-dry years; and 85 percent, 70 percent, and 60 percent of historical use in the first, second, and third year, respectively, of a multiple-dry year period.
- CCWD's long-term water transfer with ECCID of up to 8,200 AFY is available in all year types. The existing agreement also provides an additional 4,000 AFY in dry years via groundwater exchange when the CVP is in a shortage situation.

- Water supply reliability benefit resulting from expansion of Los Vaqueros Reservoir is based on modeling performed for the project's Environmental Impact Report.
- Groundwater used in the Cities of Pittsburg, Antioch, and Martinez, DWD, GSWC (Bay Point) service areas and unincorporated areas are not available in dry years.
- Mallard Slough, industrial and municipal river diversions for an average year are based on average annual diversion over ten-year period (2000-2010). It is assumed these supplies are not available in dry years.
- Recycled water supplies were based on current and planned projects and volumes provided by the municipal and wastewater agencies. It is assumed that recycled water supplies are available in all year types.
- If the Concord Community Reuse Plan is implemented, recycled water supplies will offset a portion of the projected increases in demand due to this new development, as described in the January 2010 Final EIR for the project.
- The District's policy is to meet at least 85 percent of demand in drought conditions and 100 percent of demand in normal years. During drought conditions, it is assumed that 15 percent of the demand will be met through customer response to short-term DMMs.

The year 2004 was determined to be representative of an average year and would thus have 100 percent of the average supply. The year 1977 was determined to be representative of the lowest supply available to CCWD Wholesale in a single dry year, and is thus used as the basis for the single dry year type. The period from 1990 through 1992 had the lowest supply available for a consecutive 3-year period and is thus used as the basis for the multiple dry year type. These years and the corresponding percent of average supply for CCWD Wholesale is noted below in **Table 7-1W**.

Table 7-1W: Bases of Water Year Data

Year Type	Base Year	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	2004		100%
Single-Dry Year	1977		78%
Multiple-Dry Years 1 st Year	1990		83%
Multiple-Dry Years 2 nd Year	1991		72%
Multiple-Dry Years 3 rd Year	1992		64%

NOTES:

(a) This table represents CCWD's total supply available in each water year type based on the assumptions described in Section 7.2. It does not, however, include a short-term demand management program that may be implemented during drought conditions to meet up to 15% of demand, consistent with CCWD's Board policy. Table 1-4 of this UWMP provides more detailed quantification of each of CCWD's water supply sources.

As a retail agency, CCWD Retail receives its supply reliability information from CCWD Wholesale. CCWD Wholesale has determined its representative base years to be 2004 for average year, 1977 for single-dry year, and 1990-1992 for multiple-dry year types. Additionally, CCWD Wholesale has provided its retailers with supply reliability information indicating that 100% of demands can be met in average and single-dry year types. For this reason it is assumed that during both average and single-dry year types, 100 percent of average supply is available for CCWD Retail. The percent of average supply for multiple-dry year 1, 2, and 3 was also determined based on information from CCWD Wholesale. These years and the corresponding percent of average supply for CCWD Retail is noted below in **Table 7-1R**.

Table 7-1R: Bases of Water Year Data

Year Type	Base Year	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	2004		100%
Single-Dry Year	1977		100%
Multiple-Dry Years 1 st Year	1990		100%
Multiple-Dry Years 2 nd Year	1991		94%
Multiple-Dry Years 3 rd Year	1992		85%

NOTES:

(a) For the purposes of UWMP, CCWD's Retail TWSA is being included as a "wholesale customer" of CCWD. Thus, this is the reliability the retail TWSA would expect to receive from CCWD's total water supplies. It is assumed that during a multiple-dry year period, the remaining supply would come from customer response to a short-term demand management program, consistent with CCWD's Board policy of meeting 100% demand in normal years and at least 85% of demand during drought conditions.

7.3. Supply and Demand Assessment

CWC 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.

Using the demand projections, existing supplies, and key assumptions described above, the supply and demand assessment was performed for three scenarios: 1) average year, 2) single-dry year, and 3) a multiple-dry year period lasting three years. The following two tables below show the supply and demand assessment for five-year increments from 2020 through 2040, assuming normal year supply and demand conditions. **Table 7-2W** includes the assessment for the District's wholesale operations and **Table 7-2R** shows the assessment for the District's retail operations.

Table 7-2W: Normal Year Supply and Demand Comparisons

	2020	2025	2030	2035	2040
Supply totals <i>(from Table 6-9W)</i>	228,800	237,700	247,000	249,200	249,800
Demand totals <i>(from Table 4-3W)</i>	163,700	170,400	177,600	185,000	191,000
Difference	65,100	67,300	69,400	64,200	58,800

Table 7-2R: Normal Year Supply and Demand Comparisons

	2020	2025	2030	2035	2040
Supply totals <i>(from Table 6-9R)</i>	100,500	103,400	106,300	109,800	113,100
Demand totals <i>(from Table 4-3R)</i>	100,500	103,400	106,300	109,800	113,100
Difference	0	0	0	0	0

NOTES:

(a) For the purposes of UWMP, CCWD's retail customers are being included as a "wholesale customer" of CCWD. In a normal year, CCWD's retail customers can expect to receive 100% of their demand from CCWD's total water supplies.

Table 7-3W and **Table 7-3R** show the supply and demand assessment under single-dry year conditions for the District's wholesale and retail operations, respectively.

Table 7-3W: Single Dry Year Supply and Demand Comparisons

	2020	2025	2030	2035	2040
Supply totals	180,100	186,800	194,000	195,700	196,000
Demand totals	163,700	170,400	177,600	185,000	191,000
Difference	16,400	16,400	16,400	10,700	5,000

Table 7-3R: Single Dry Year Supply and Demand Comparisons

	2020	2025	2030	2035	2040
Supply totals	100,500	103,400	106,300	109,800	113,100
Demand totals	100,500	103,400	106,300	109,800	113,100
Difference	0	0	0	0	0

NOTES:

(a) For the purposes of UWMP, CCWD's retail customers are being included as a "wholesale customer" of CCWD. In a single-dry year, the retail customers can expect to receive 100% of their demand from CCWD's total water supplies.

Table 7-4W and **Table 7-4R** show the supply and demand assessment under multiple-dry year conditions for the District’s wholesale and retail operations, respectively. The supply totals during the second and third year of a multiple-dry year period include a short-term demand management program that would meet up to 15 percent of customer demand, consistent with CCWD’s Board policy.

Table 7-4W: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040
First Year	Supply totals	191,000	198,500	206,400	208,200	208,500
	Demand totals	163,700	170,400	177,600	185,000	191,000
	Difference	27,300	28,100	28,800	23,200	17,500
Second Year	Supply totals	164,100	170,500	177,600	185,000	191,000
	Demand totals	163,700	170,400	177,600	185,000	191,000
	Difference	400	100	0	0	0
Third Year	Supply totals	163,700	170,400	177,600	185,000	191,000
	Demand totals	163,700	170,400	177,600	185,000	191,000
	Difference	0	0	0	0	0
NOTES:						
(a) For the purposes of UWMP and data consistency, CCWD's wholesale supply includes supplies for both its wholesale and retail customers too. In all years, CCWD's customers can expect to receive 100% of their demand in normal years, single-dry years, and the first year of a multiple-dry year period. Beginning in 2030, during the second and third year of a multiple-dry year period, the supply totals include a short-term demand management program, which would meet up to 15% of customer demand, consistent with CCWD's Board policy.						
(b) CCWD's Board policy is to meet 100% of demand in normal years, and at least 85% of demand in drought conditions, with up to 15% being met through customer response to short-term demand management measures.						
(c) Assuming anticipated passive conservation savings are realized, and all planned water use efficiency projects are implemented (conservation and recycled water), CCWD anticipates additional supplies will be needed to meet a shortfall in 2040 under multiple-year drought conditions. CCWD evaluates its long-term water supply and demand forecast every five years.						

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

		2020	2025	2030	2035	2040
First Year	Supply totals	100,500	103,400	106,300	109,800	113,100
	Demand totals	100,500	103,400	106,300	109,800	113,100
	Difference	0	0	0	0	0
Second Year	Supply totals	100,500	103,400	106,300	109,800	113,100
	Demand totals	100,500	103,400	106,300	109,800	113,100
	Difference	0	0	0	0	0
Third Year	Supply totals	100,500	103,400	106,300	109,800	113,100
	Demand totals	100,500	103,400	106,300	109,800	113,100
	Difference	0	0	0	0	0

NOTES:

(a) For the purposes of UWMP, CCWD's retail customers are being included as a "wholesale customer" of CCWD. Beginning in 2030, during the second and third year of a multiple-dry year period, the supply totals include a short-term demand management program, which would meet up to 15% of customer demand, consistent with CCWD's Board policy.

(b) CCWD's Board policy is to meet 100% of demand in normal years, and at least 85% of demand in drought conditions, with up to 15% being met through customer response to short-term demand management measures.

(c) Assuming anticipated passive conservation savings are realized, and all planned water use efficiency projects are implemented (conservation and recycled water), CCWD anticipates additional supplies will be needed to meet a shortfall in 2040 under multiple-year drought conditions. CCWD evaluates its long-term water supply and demand forecast every five years.

7.4. Regional Supply Reliability

CWC 10620

(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.

In order to maximize its water resources and minimize its need for additional supplies, CCWD is collaborating with several Bay Area agencies on an Integrated Regional Water Management Plan as well as the BARR Project.

7.4.1. Integrated Regional Water Management

CCWD is a member of the East Contra Costa County IRWM group. CCWD provides a leadership role in the IRWM group by coordinating grant applications and administration. The member agencies have a history of successfully collaborating on water management planning, projects, and issues and the IRWM has facilitated the successful acquisition of grant funding for the region. Under Proposition 50, the region received \$12.5 million and under Proposition 84, \$2.66 million. In addition, individual agencies with projects included in the IRWM Plan have received approximately \$15 million under Proposition 1E. The ECCC IRWM's most recent Proposition 84 funding success is a recommendation for \$670,000 for three projects to offset water supply from the Delta through water recycling and conservation.

7.4.2. Bay Area Regional Reliability Project

The District together with seven other Bay Area water agencies, including ACWD, BAWSCA, EBMUD, MMWD, SFPUC, SCVWD, and Zone 7, are participating in the BARR effort to improve water supply reliability in the Bay Area. Benefits of a regional approach include: leveraging existing infrastructure investments, facilitating the transfer of water during shortages, bolstering emergency preparedness, and improving climate change resiliency.

8. Water Shortage Contingency Planning

CWC 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.

Health and Safety Code Section 115921

As used in this article the following terms have the following meanings:

(a) "Swimming pool" or "pool" means any structure intended for swimming or recreational bathing that contains water over 18 inches deep. "Swimming pool" includes in-ground and aboveground structures and includes, but is not limited to, hot tubs, spas, portable spas, and non-portable wading pools.

This chapter contains CCWD's Water Shortage Contingency Plan (Shortage Plan) that addresses the water management practices required during a drought or other interruption of water supplies. The Shortage Plan helps CCWD consider impacts of short-term supply deficiency including financial hardship on both the community and CCWD, and deterioration of customer relations. CCWD uses shortage planning to anticipate drought conditions and to prepare for catastrophic interruptions in water supply.

Water supply shortage is the difference between demand and the sum of the reduced CVP allocation and additional secure sources of supply. The District's CVP allocation is defined in the CVP water service contract and the M&I Water Shortage Policy. The M&I Water Shortage Policy was developed by Reclamation to (1) define water shortage terms and conditions applicable to all CVP M&I contractors, as appropriate; (2) establish CVP water supply levels that would sustain urban areas during droughts, and during severe or continuing droughts would assist the M&I contractors in their efforts to protect public health and safety; and (3) provide information to M&I contractors for development of drought contingency plans. The current M&I Water Shortage Policy provides for a minimum shortage allocation of 75 percent of adjusted historical use until irrigation allocations fall below 25 percent. In addition, Reclamation will deliver CVP water to CCWD at not less than a public health and safety water supply level, provided CVP water is available, if the Governor declares an emergency due to water shortage or if an emergency exists due to water shortage. CCWD's CVP allocation during a minimum public health and safety condition shall be sufficient to satisfy public health and safety requirements, which is estimated to be 60 percent of normal demand.

8.1. Stages of Action

This section discusses the projected supply shortfall as it is used to trigger the adoption of a stage appropriate to the severity of the water shortage. To manage a water supply shortfall condition, four demand reduction stages have been defined. The total demand reduction goal for each stage increases from less than 10 percent to up to 50 percent of normal demand from Stage I to Stage IV. Stages I and II involve voluntary customer demand reduction measures and Stages III and IV impose mandatory measures including allotments and temporary drought charges.

The water supply reliability goal adopted in the FWSS is to meet 100 percent of demand in normal years, and at least 85 percent of demand during a drought condition in which persistent dry weather conditions leads to water-related problems such as water supply shortages. Stages I and II may be implemented in response to drought conditions to obtain up to a 20 percent reduction in demand. Stages III and IV are expected to be implemented in response to emergency regulations or a catastrophic interruption in supply such as an earthquake or other emergency. **Table 8-1W** and **Table 8-1R** summarize the four stages.

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

Stage	Complete Both	
	Supply Reduction ^(b)	Water Supply Condition
I	Up to 10%	CCWD's total supply is able to meet at least 90% of anticipated demands
II	10 – 20%	CCWD's total supply is able to meet at least 80% of anticipated demands
III	20 – 40%	CCWD's total supply is able to meet at least 60% of anticipated demands
IV	40 – 50%	CCWD's total supply is able to meet at least 50% of anticipated demands

NOTES:

(a) CCWD's WSCP applies to both its retail and wholesale service areas.

(b) "Supply reduction" refers to the percentage of overall demand reduction that would be required for the each stage.

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

Stage	Complete Both	
	Percent Supply Reduction ^(b)	Water Supply Condition
I	Up to 10%	CCWD's total supply is able to meet at least 90% of anticipated demands
II	10 – 20%	CCWD's total supply is able to meet at least 80% of anticipated demands
III	20 – 40%	CCWD's total supply is able to meet at least 60% of anticipated demands
IV	40 – 50%	CCWD's total supply is able to meet at least 50% of anticipated demands

NOTES:

(a) CCWD's WSCP applies to both its retail and wholesale service areas.

(b) "Percent supply reduction" refers to the percentage of overall demand reduction that would be required for the each stage.

A water reduction stage is implemented if a water supply shortfall is forecasted for the upcoming year. The estimate of the supply shortfall is only a rough guess, even as late in the water year as March. Although criteria are described in CCWD's water supply contract to determine CCWD's water allotment, these criteria define CCWD's water supply allotment relative to a historical use. Historical use is defined by the M&I Water Shortage Policy as the average quantity of CVP water put to beneficial use within the service area during the last three years of water deliveries, unconstrained by the availability of CVP water. The M&I Water Shortage Policy also recognizes that certain circumstances may require adjustment of the historical use such as growth, extraordinary water conservation measures, or use of non-CVP water supplies. The level of supply shortfall is expressed as a percent of the normally occurring demand that would need to be reduced to meet the available supplies. Available supplies include CVP, ECCID, and other dry-year purchases. This percent reduction is matched to the total reduction goal shown in **Table 8-1W** and **Table 8-1R** to select the appropriate stage.

Additional factors to be considered in implementing a water reduction stage include the following:

- Time and circumstances permitting, the stages should be stepped through without skipping stages. This avoids drastic and sometimes unnecessary actions that may cause problems for CCWD including loss of customer confidence, financial shortfall, and difficulties implementing the emergency water reduction program.
- Customer response to the current stage may either require CCWD to implement the next stage or remain at a current stage. The stages allow CCWD to note the customer's response to less severe stages before implementing the stricter stages.
- Predictions of demand and supply are not always accurate. To help determine if the water reduction program is achieving expected results, demands should be monitored no more often than monthly during Stage I, weekly during Stage II, and daily during Stages III and IV.

Again, the estimate of the water supply shortage is rough and a contingency should be made to err on the side of achieving a more than adequate water reduction level.

8.2. Prohibitions on End Uses

This section describes CCWD's policies and prohibitions against specific water use practices during water shortages.

8.2.1.1. Ongoing Water Waste Prohibitions

Board Resolution No. 93-23 - *Water Waste Prohibitions within the Area Served by the District* includes prohibitions on wasteful water uses such as prohibiting the use of potable water for street cleaning, washing paved or hard-surfaced areas, using single pass cooling systems in new connections, and failure to repair a controllable leak of water. A general policy regarding the practice of waste is also included in CCWD Code of Regulations Section 5.44.010. A summary of Board Resolutions and a list of CCWD Regulations regarding water waste are provided in Appendix F.

Specific prohibited uses of District-furnished water, including one enacted during the 2015 Drought Management Program, are summarized in **Table 8-2R** below.

Table 8-2R: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Uses	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
I, II	Landscape - Restrict or prohibit runoff from landscape irrigation	No watering of outdoor landscapes in a manner that causes excessive runoff such that water flows onto adjacent property, non-irrigated area, private and public walkways, roadways, parking lots, or structures	No
I, II	Landscape - Limit landscape irrigation to specific times	No watering of outdoor landscapes during the daylight hours of 9 am - 5 pm	No
I, II	Other - Require automatic shut of hoses	No washing of a vehicle, trailer, or boat using a hose without a shutoff nozzle	No
III, IV	Landscape - Restrict or prohibit runoff from landscape irrigation	No watering of outdoor landscapes in a manner that causes excessive runoff such that water flows onto adjacent property, non-irrigated area, private and public walkways, roadways, parking lots, or structures	Yes
III, IV	Landscape - Limit landscape irrigation to specific times	No watering of outdoor landscapes during the daylight hours of 9 am - 5 pm	Yes
III, IV	Landscape - Limit landscape irrigation to specific days	No watering of outdoor landscapes more than two days per week	Yes
III, IV	Landscape - Prohibit certain types of landscape irrigation	No watering of ornamental turf on public street medians	Yes
II, III, IV	Landscape - Other landscape restriction or prohibition	No watering of outdoor landscapes during and up to 48 hours after measurable rainfall (No penalty for Stage II)	Yes

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

Stage	Restrictions and Prohibitions on End Uses	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
II, III, IV	Landscape - Other landscape restriction or prohibition	No watering of landscape of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development (No penalty for Stage II)	Yes
II, III, IV	CII - Lodging establishment must offer opt out of linen service	Operators of hotels and motels shall provide guests with the option of choosing not to have towel and linens laundered daily. A notice shall be prominently displayed in each bathroom (No penalty for Stage II)	Yes
II, III, IV	CII - Restaurants may only serve water upon request	Serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased (No penalty for Stage II)	Yes
I, II, III, IV	CII - Other CII restriction or prohibition	Prohibit the use of non-recirculating systems in all new conveyer car wash and commercial laundry systems.	No
I, II, III, IV	Water Features - Restrict water use for decorative water features, such as fountains	Prohibit the use of decorative fountains, or filling decorative lakes or ponds (No penalty for Stages I and II.)	Yes
III, IV	Other - Require automatic shut of hoses	No washing of a vehicle, trailer, or boat using a hose without a shutoff nozzle	Yes
I, II, III, IV	Other - Prohibit use of potable water for construction and dust control	Recycled water must be used for construction and dust control unless not available (No penalty for Stages I and II.)	Yes
I, II, III, IV	Other - Prohibit use of potable water for washing hard surfaces	Prohibit washing paved or other hard-surfaced areas, including sidewalks, walkways, driveways, patios, and parking areas (No penalty for Stages I and II)	Yes

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

Stage	Restrictions and Prohibitions on End Uses	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
III, IV	Other	Prohibit irrigation through any new connection to the Contra Costa Canal and Laterals system	Yes
I, II, III, IV	Other	Prohibit flushing sewers or hydrants, testing fire systems or washing streets, except when deemed necessary by the District for emergencies, essential operations, or for public health and safety purposes (No penalty for Stages I and II.)	Yes
I, II, III, IV	Other	Prohibit the use of single pass cooling systems in new connections	No
I, II, III, IV	Other	Failure to repair a controllable leak of water is prohibited.	No
IV	Other	Prohibit new water service connections	Yes

8.3. Penalties, Charges, Other Enforcement of Prohibitions

8.3.1. Excessive Use Penalties

To encourage efficient water use and/or to penalize excessive water use, the District may consider using excess use charges or temporary drought charges. The amount of these charges may vary depending on the severity of the drought. In the 2009 Drought Management Program, CCWD charged 4 times the unit price for water use in excess of the customer's historical use or 1,000 gallons per day (whichever is greater). In the 2015 Drought Management Program, the District instituted a temporary drought charge for all water use greater than 200 gallons per day.

8.3.2. Enforcement of Prohibitions

After the publication of any ordinance, or other restrictions or prohibitions on water use contained in the District Code of Regulations, administrative fines or penalties may be imposed consistent with the authority provided in the California Government Code section 53069.4, or by additional authority approved by the Governor pursuant to the California Emergency Services Act or Executive Order, or by action of the California Legislature. The purpose of the administrative fines and penalties is to assure compliance by customers by creating a meaningful disincentive to commit future violations of the rules or regulations. Violations are subject to administrative fines and penalties until the ordinance has been repealed, or the declared statewide emergency has ended.

8.4. Consumption Reduction Methods

Consumption reduction methods are actions taken by CCWD to reduce water demand within its service area, whereas prohibitions, addressed in Section 8.2, limit specific uses of water. A summary of the consumption reduction methods that may be utilized by CCWD during a water shortage emergency are summarized in **Table 8-3R**.

Table 8-3R: Stages of WSCP – Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
All stages	Expand Public Information Campaign	
All stages	Offer Water Use Surveys or assistance	
All stages	Provide Plumbing Fixtures and Devices	
All stages	Provide Rebates for Landscape Irrigation Efficiency	
All stages	Provide Rebates for Turf Replacement	
III, IV	Decrease Line Flushing	
III, IV	Increase Water Waste Patrols	
IV	Moratorium or Net Zero Demand Increase on New Connections	
II, III, IV	Implement or Modify Drought Rate Structure or Surcharge	
All stages	Other	Implement percentage reduction goal set by customer type
III, IV	Other	Implement the use of flow restriction devices for customers that have repeated water use prohibition violations
IV	Other	Implement allotment by customer type (see sections below)

8.4.1. Water Allotment Methods

This section presents suggested water allotment methods for each customer type. A key element of this step is involvement of the public in order to create a program that the community understands, contributes to, and supports.

Water allotments are not required for Stage I since it is voluntary. Stage II may require the use of allotments depending on the overall reduction goal, and Stages III and IV will require water allotments.

The allotment methods discussed here, except the flat allocation, use “base-year consumption” for each user to calculate each customer’s water allotment. The base-year consumption is an estimate of a customer’s normal, non-drought water consumption for each billing period. Previous years’ consumption may not reflect current demand because of previous drought and economic conditions; therefore, base-year consumption may be determined using the water use from the prior year or an average water use from several years prior. The more accurate the base-year consumption is, the more equitable the drought water allotments will be.

8.4.2. Single Family and Multi-Family Residential Accounts

The three allocation methods to be considered to achieve a 10 to 50 percent mandatory reduction are:

- Percent reduction
- Flat allocation
- Hybrid flat allocation/percent reduction

The following **Figure 8-1** provides a summary of the advantages and disadvantages of the three allocation method options for single and multi-family residential customers.

Figure 8-1: Allotment Method Options for Single-Family and Multi-Family Residential Accounts		
Allotment Method	Advantages	Disadvantages
Percent Reduction	• Easy to determine and administer	• Penalizes conservers and rewards water wasters • May not provide health and safety requirements in extreme shortages • Undermines water conservation efforts and encourages water wasting during non-shortage periods • Base bi-monthly consumption must be determined for each customer • Choosing base year is especially difficult after multiple drought years
Flat Allotment	• Easy to determine and administer • Effective for periods of extreme shortage (Stage IV) • Base-year consumption for each customer is not needed • Does not penalize conservers	• Not equitable for larger properties or families • Does not recognize customer water use characteristics

Figure 8-1: Allotment Method Options for Single-Family and Multi-Family Residential Accounts

Allotment Method	Advantages	Disadvantages
Hybrid Percent Reduction/Flat Allotment	• More equitable to customers than percent reduction and flat allotment as it only reduces non-health and safety water use • Flexible – suitable for all stages • Provides customers greatest control • May minimize customer complaints and appeals	• More complicated to develop and program into billing system than the simple percent reduction. • More complicated to explain to customers • Base bi-monthly consumption must be determined for each customer

8.4.2.1. Percent Reduction

The allocation is calculated by reducing the user's base-year water use for each billing period by a specific percentage. The percentage reduction is the same for all the users within the customer class. Advantages of this method include the ease of its administration and understanding and its effectiveness in reducing water use in a water crisis (Stage IV). The method has several disadvantages, including the potential to penalize conservers. The percent reduction can also undermine the District's water conservation efforts by encouraging customers to waste water during non-drought times in order to have a higher base-year. In addition, it is difficult to determine a base year after multiple drought years. Because this method has the potential to penalize conservers and benefit inefficient water users, it may be an inequitable method for the residential user class.

8.4.2.2. Flat Allocation

The flat allocation method provides the same allotment of water to all residential customers, regardless of past water use. The advantages are that it is simple to understand and administer, and it ensures that health and safety requirements are met. Also, base-year water use for each customer is not required. This method may be appropriate for late Stage III and for Stage IV drought plans because it evenly allocates the minimal amount of water available to all of the users. The major disadvantage of the flat allocation method is that it can abruptly impose severe reductions on households with four or more people and/or homes with substantial landscaping while residences with three or fewer people and/or homes with small landscapes are relatively unaffected. This inequity causes public complaints that can potentially overburden District staff. This method may not be appropriate for late Stage II or early Stage III plans because of the inappropriately severe reductions imposed on a substantial portion of the user class.

8.4.2.3. Hybrid Flat Allotment/Percent Reduction

The “hybrid” method provides health and safety water equally for all customers and then reduces non-essential water on a fixed or sliding scale. Customers who historically use very high amounts of water would be asked to reduce more than those that use less historically. Advantages of the hybrid method are that it provides health and safety water to all customers and appears to be the most equitable between large and small water users. The major disadvantage of the hybrid method is that it is difficult to explain to customers and is more difficult to program into the water billing system.

8.4.3. Dedicated Irrigation Accounts

The customer classes that exclusively use water for irrigation are the treated water Residential, Commercial and Public Authority dedicated irrigation accounts, and the untreated water metered and un-metered irrigation accounts. For the metered accounts, the two water allocation method options that may be considered for the irrigation user classes are:

- Percent Reduction
- Water Budget Based Allocation

8.4.3.1. Percent Reduction

A water allocation is calculated by reducing the user’s base-year water use, for each billing period, by a specific percentage. The percentage reduction is the same for all the customers in this customer class. The advantages stem from its simplicity: the method is easy to administer and understand. The major disadvantage of the percent reduction is it penalizes conservers and benefits water wasters. The percent reduction can undermine the District’s water conservation efforts by encouraging customers to waste water during non-drought times. Properties that historically manage their landscape water efficiently are unable to maintain their landscapes without damage, whereas historically wasteful customers will reduce and have little impact to their landscape quality.

8.4.3.2. Water Budget Based Allocation

Accounts with dedicated irrigation meters are provided individual water allocations that are determined by a calculation using the property’s landscape acreage and local historical weather data. The weather data comes from the California Irrigation Management Information System (CIMIS) weather data service, and the landscape acreage information comes from the District’s existing Landscape Water Budget Conservation Program. By utilizing this existing information, the District can develop site-specific allocations for each account. The primary advantage of this method is that it is equitable between all properties. This method is fair to those properties that have historically managed their water efficiently. Sites that have historically wasted water will be required to reduce more to stay within their allocation. The disadvantage of this method is it is more difficult to explain to customers. However, many landscape professionals prefer this method as it is more equitable.

8.4.4. Flat Rate Irrigation Accounts

During Stage II, flat rate irrigation accounts could be required to cut a specific percentage or be required to water only on specific days of the week. Alternatively, for Stage III and IV all flat rate irrigation services could be suspended.

8.4.5. Commercial Accounts

Commercial businesses are a significant source of jobs and revenue for Contra Costa County. Therefore, the required reductions for commercial accounts are less than for residential and landscape accounts to minimize impacts to the local economy. However, some reduction is required under each stage. The commercial customer class covers a variety of water users. The users vary from laundries and linen supplies to restaurants and health care facilities, and from car washes to hotels and retail stores. Each user has significantly different quantities and uses of water. Therefore, because of this large variation, the percent reduction appears to be the most viable water allocation method. In addition to the percent reduction, commercial customers can be required to demonstrate they are using water efficiently before they are allowed an increase to their allotment.

Older commercial properties often have landscape water that is supplied by the same water meter as the building. Reducing this landscape water would not pose a hardship on their business. Therefore, including day of the week watering restrictions is one way to get additional savings out of the commercial sector, without affecting business.

Every effort must be made by CCWD to help the various businesses reduce their water use and minimize economic hardship. There exists an essential water use for each business that, when not met, creates undue economic hardship for that business. CCWD must attempt to assess a business's essential water use when reviewing an appeal. In a Stage III response, a business's essential water use may be considered as similar to the health and safety requirement for residential users. However, in a Stage IV (water crisis), a business's essential water use is secondary to the residential health and safety requirement.

Educational materials are available from the State Department of Water Resources for the Commercial Service customers to help them reduce their water use. There are also private sector companies that support commercial businesses in their efforts to conserve. Note that, to appeal for more water, the business must show proof of an attempt to reduce their water use before their appeal can be considered. This may be effective in eliminating the number of "casual" appeals and ensuring that an effort has been made to reduce water use.

8.4.6. Industrial Accounts

Industries account for approximately one-third of CCWD's total water use. The vast majority of industrial water use is for process. The industries served by CCWD are a significant source of jobs and revenue for Contra Costa County and the State of California. Driven by the incentives to reduce costs and the risks of production losses, some industries have aggressively pursued water use efficiency practices for over twenty years. As a result, significant water conservation has been achieved and further water reduction may be more difficult and much more expensive. A Stage II

reduction (10 to 20 percent overall) may be achievable by applying a 0 to 5 percent reduction to the industrial users and imposing larger reductions on other user classes. However, overall reductions for Stage III and IV (20 to 50 percent) may require industries to reduce use by more than 10 percent and risk production shutdown. A percent allocation calculated on a case-by-case basis may be the most equitable allocation method and is feasible because of the small number of industrial customers. As an option to installing costly additional conservation upgrades or loss of production, industries may be charged a fee to help reduce water use in other user classes. This “reliability fee” may be used by CCWD to implement conservation programs and other drought actions. An effective program would set each fee sufficient to reduce water use in other classes by the amount allocated to a given industrial customer.

8.4.7. Public Authority

The Public Authority user class includes schools and public and government buildings. The percent reduction allocation method is the only method considered here because of the customers’ varied water uses.

8.4.8. Municipal

CCWD provides untreated and treated water to six municipal customers. The percent reduction method is the only method considered here because of the varied water uses within the municipal customers’ service areas. Each municipal customer has its own shortage plan and will determine how the overall supply shortage is to be accommodated by its various customer classes.

8.4.9. Agricultural

The agricultural user class could be dealt with in two ways: their allocation could be in proportion to the CVP Agricultural Water allocation (which is likely to considerably less than the M&I level) or they can be treated as any other customer class. It is proposed that this class be allocated water in the same proportion as municipal customers. Overall agricultural water use within CCWD is small (typically less than 100 AFY) and would mean only a minor change in allocations to others.

8.4.10. Water Allotment Appeals

A committee is formed to assess, approve, or deny appeals to water allotments provided under the District’s Drought Management Program. The allotment appeal process that was distributed to all customers during the 2015 Drought Management Program included four acceptable reasons for variance:

- Medical requirements
- Health and safety
- Number of household members increased from base years
- Any irrigation/landscape circumstance changes from base years

CCWD provides wholesale untreated and treated water to six municipal customers. As described in Section 8.4.8, CCWD would implement the percent reduction method on the municipal

customers' total water use and provide the flexibility for the municipal customer to determine how best to reduce consumption in their service areas. Each of CCWD's municipal customers is required to prepare its own water shortage contingency plan, which describes how the overall water supply shortage would be accommodated by each of its customer classes. Determining Water Shortage Reductions

CWC 10632

(a)(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

Demands must be monitored frequently during emergency water shortages to enable CCWD to effectively manage the balance between supply and demand. In general, CCWD will use production and pumping records to determine if reduction goals are being met.

In normal water supply conditions, production and pumping amounts are recorded daily and monthly totals are reported to the Finance Department. During a Stage I or II water shortage, weekly production and pumping amounts are forwarded to the Finance Department. The Finance Department compares the weekly data to the reduction targets to verify that the goal is being met. In addition, monthly reports are provided to CCWD's Board of Directors. If reduction goals are not met, the General Manager will notify the Board so that corrective action can be taken. During a Stage III or IV water shortage, the same procedure will be followed; if deemed necessary, a daily production and pumping report will be provided to the Director of Finance.

8.5. Revenue and Expenditure Impacts

This section describes the potential impacts to CCWD's revenue resulting from implementation of temporary consumption reduction actions and measures to overcome those impacts. Normalized water sales, unaffected by drought and economic impacts, are used as an example of a normal revenue pattern. **Figure 8-2** shows the normal untreated and treated water use levels and the reduced levels associated with each stage (assuming a given stage is in effect for one year).

Figure 8-2: Example Water Sales by Stage						
Water Sales ^(a) (AFY)	Current Use	Stage 1 Up to 10%	Stage II 10-20%	Stage III 20-40%	Stage IV 40-50%	Maximum Reduction 50%
Untreated Water	86,100	77,490	68,880	60,270	51,660	43,050
Treated Water	36,700	33,030	29,360	25,690	22,020	18,350
Total	122,800	110,520	98,240	85,960	73,680	61,400
NOTES: (a) Water sales are estimated based on current normalized water sales, not affected by drought water shortages or economic impacts. Totals do not include deliveries from other sources, such as groundwater or customers' own surface water supplies.						

To estimate the impact of each stage on revenues, current commodity rates and charges (as of March 2016) are applied to the water use levels in **Figure 8-2**. These revenue reductions are combined with estimated increased expenses resulting from managing the supply shortfall to derive the net revenue shortfalls shown in **Figure 8-3**. To simplify the analysis, only CCWD's revenue most sensitive to variation in annual water use and expenses significantly altered by the managing of a water shortage is included in the tables. The net change from the "normal" water supply condition is identified for the revenue and expense items and represents the total estimated revenue impact.

Figure 8-3: Example Revenue Impact of Reduced Customer Sales

Revenue/Expenses	2016 Revenue (x1,000)	Stage I 5% (a) (x1,000)	Stage II 15% (a) (x1,000)	Stage III 25% (a) (x1,000)	Stage IV 40% (a) (x1,000)	Max. Reduction 50% (a) (x1,000)
Revenue Impacted by Shortage						
Treated Water Variable ^(b)	\$60,700	\$54,600	\$48,600	\$42,500	\$36,400	\$30,300
Untreated Water Variable ^(b)	\$57,600	\$51,800	\$46,100	\$40,300	\$34,500	\$28,800
TW Facilities Reserve Charge ^(c)	\$4,340	\$4,340	\$4,340	\$4,340	\$-	\$-
Subtotal	\$122,640	\$110,740	\$99,040	\$87,140	\$70,900	\$59,100
Net Revenue Change	\$-	(\$11,900)	(\$23,600)	(\$35,500)	(\$51,740)	(\$63,540)
Operating Expenses						
Extra Administrative ^(d)			\$400	\$400	\$400	\$400
CVP Supply Costs ^(e)	\$-	(\$730)	(\$1,450)	(\$2,180)	(\$2,900)	(\$3,630)
Net Expense Change	\$-	(\$730)	(\$1,050)	(\$1,780)	(\$2,500)	(\$3,230)
Estimated Surplus or (Deficiency)	\$-	(\$11,170)	(\$22,550)	(\$33,720)	(\$49,240)	(\$60,310)

NOTES:

(a) The overall reduction goal is shown for each stage, however, these reductions may differ from the projected reductions for specific customer classes.

(b) Based on treated and untreated water rates effective March 2016 and a weighted average of the treated water energy zone surcharge.

(c) Revenue from the treated water facilities reserve charge is not expected to be affected by a shortage unless a new connection moratorium is imposed under extreme shortage conditions (Stage IV).

(d) Stages II, III, and IV costs reflect hiring the equivalent of four temporary staff and increased costs to administer and implement a customer communication effort.

(e) Cost savings for supply computed as the variable cost of CVP water (\$59.13/AF), effective March 2016, multiplied by the difference between the normal year sales and the shortage condition sales.

CCWD updates its Ten-Year Capital Improvement Program (CIP) annually based on historical and projected revenue and expenditures. The CIP provides a comprehensive view of the asset investments required over the next ten years to ensure adequate water resources, maintain high quality water, and meet the service needs of present and future customers. The CIP allows CCWD to prioritize its investments, manage cash flows, and project revenue requirements and long-term rate impacts to fund the proposed projects and anticipated operating costs. The revenue sources available to CCWD include water sales, system connection fees, interest income, property taxes, applicant funds, reserves, and other non-operating revenues including new funds from regional partnerships and various grants.

CCWD's annual CIP update provides the means to address the revenue impacts of reduced customer sales resulting from drought. Actions that may be taken in the CIP include use of reserves, reductions or deferrals in capital expenditures, and rate adjustments. The District maintains a specific reserve fund (Drought Relief Fund) to help mitigate the revenue impacts of a prolonged drought. There may be additional outside funding sources made available to water agencies under a water emergency situation (Stage IV).

During drought conditions variable water production costs may be lower, including water purchases and energy costs due to limited water supplies available for purchase. These lower variable costs partially offset reduced water sales revenues. Additionally, the District may enact a drought surcharge or temporary drought charge that would provide additional revenue to offset some of the lost revenue from reduced water sales. The District's 2015 Drought Management Program, as established under Ordinance 15-01, included the implementation of a Temporary Conservation Pricing increase of \$0.50 per unit (748 gallons) in the treated water quantity charge, and of \$0.25 per 1,000 gallons in the untreated water quantity charge. The intent of the pricing adjustment was first, to encourage conservation, and second, to recover up to half of the lost revenue from reduced sales. More information on the District's demand management measures is included in Chapter 9.

8.6. Resolution or Ordinance

In order to adopt a water shortage contingency ordinance, CCWD will first develop an Emergency Water Reduction Plan outline that will be presented to the Board for their conceptual approval at least one month before it may need to be adopted. Staff requires time to prepare for special procedures and the customer service and billing personnel will make program modifications to the billing system. CCWD's Board of Directors will be kept well informed of the shortage status to enable them to make timely and appropriate decisions on the following actions:

1. Declaration of water shortage emergency
2. Adoption of Emergency Water Reduction Plan
3. Frequent assessment of water shortage status
4. Adoption of resolutions to change stage as necessary
5. Coordination with municipal and industrial customers on the development and implementation of the plan

Water shortage resolutions have been adopted by CCWD's Board of Directors in response to past drought events, including the 1987-1992 and 2007-2009 droughts. Additionally, an ordinance (15-01) establishing the 2015 Drought Management Program was adopted by the Board of Directors in response to the 2014-2015 drought. A list of drought and water shortage-related resolutions and ordinances adopted by CCWD's Board is included in Appendix F. Ordinance 15-01, which is provided in Appendix F is an example of a water shortage contingency resolution or ordinance that the District may adopt in response to a future water shortage.

8.7. Catastrophic Supply Interruption

Catastrophic supply interruptions differ from the staged drought responses addressed earlier in this chapter in that catastrophic interruptions occur suddenly and can immediately jeopardize a large portion of CCWD's water supply. CCWD is prepared to address major water shortage emergencies in several ways. Emergency response procedures are described in the Emergency Operations Plan (EOP). In addition, the Seismic Reliability and Improvement and Los Vaqueros Projects have been implemented to minimize damage and service interruptions resulting from a regional power outage, earthquakes, or other disaster that results in disruptions to CCWD's supplies.

Figure 8-4 below summarizes the actions CCWD has taken to prepare for catastrophic supply interruption. The sections following the table further describe the options available to the District during an emergency.

Figure 8-4 : Preparation Actions for a Catastrophe

Examples of Actions	Source
Determine what constitutes a proclamation of a water shortage emergency.	UWMP
Stretch existing water storage.	UWMP
Obtain additional water supplies.	UWMP, FWSS
Develop alternative water supplies.	FWSS
Determine where the funding will come from.	Budget, CIP
Contact and coordinate with other agencies.	EOP
Create an Emergency Response Team/Coordinator.	EOP
Create a catastrophe preparedness plan.	EOP
Put employees/contractors on-call.	EOP
Develop methods to communicate with the public.	EOP
Develop methods to prepare for water quality interruptions.	EOP, LVP, LVE
Increase seismic reliability of conveyance and distribution systems	SRIP, CIP
Increase emergency storage	LVP, TWMP, LVE
NOTES: Acronyms used in this table: UWMP - CCWD Urban Water Management Plan FWSS - CCWD Future Water Supply Study CIP - CCWD Ten Year Capital Improvement Program EOP - CCWD Emergency Operations Plan SRIP – Seismic Reliability Improvement Project LVP – Los Vaqueros Project TWMP – Treated Water Master Plan LVE – Los Vaqueros Expansion Project	

8.7.1. Emergency Operations Plan (EOP)

In order to protect the public welfare in the event of an emergency, it is essential that the District respond in an expeditious and coordinated manner. CCWD's EOP provides a framework for directing District-wide responses to a broad scope of emergency situations associated with natural disasters, power outages, or other disasters. It supplements existing operational plans and emergency procedures and reflects CCWD's emergency operations policy.

CCWD coordinates with Contra Costa County, its political subdivisions, and other water districts and utilities within the State to plan for the effective mobilization and utilization of available resources during disasters. During emergencies, CCWD may request mutual aid response through the State Office of Emergency Services. Upon request by the County, State, or other public authority, and when feasible, CCWD may provide personnel, supplies, and equipment resources to other agencies. CCWD is also a member of the California Water/Wastewater Agency Response Network (CalWARN) which was established to support and promote statewide emergency preparedness, disaster response, and mutual assistance processes for public and private water and wastewater utilities.

8.7.2. Seismic Reliability and Improvement Project

In 1997, CCWD completed a Seismic Reliability and Improvements Study of the reliability and capacity of its water distribution facilities. As a result of the study, CCWD has completed three major capital projects that improve the capacity and reliability of the untreated water system to meet future demands, as well as to meet potential fire flow needs following a major earthquake or other disaster. These projects are: Raw Water Seismic Improvement Project, which reinforced seven areas of seismic vulnerability along the Contra Costa Canal; the Mallard Slough Pump Station project, which replaced the existing 65-year-old Mallard Slough intake at Bay Point; and the MPP, which is a 21-mile long pipeline to supplement the capacity of the Contra Costa Canal. Additionally, CCWD has implemented projects that improve the reliability of its treated water system, including the Fault Crossings Connections project, which installed connections at three locations where large treated water transmission pipelines cross the Concord fault; the Emergency Generators project, which provided six permanent and two portable backup generators at critical pump stations in CCWD's treated water distribution system; and the Seismic Isolation Valves project, which installed five isolation valves at key treated water reservoirs.

The MPP conveys treated water from the Randall-Bold Water Treatment Plant in Oakley to CCWD's existing water distribution system in Concord, near the Bollman Water Treatment Plant. Under normal operations, the MPP delivers treated water from east to west, to the District's treated water customers. In an emergency, the MPP could also carry water in the reverse direction (from west to east), transporting treated water eastward from the Bollman Water Treatment Plant to customers in eastern Contra Costa County. The MPP also has several emergency connections to the Canal. If the Canal is damaged during an earthquake or requires maintenance, water could be diverted from the MPP to the Canal around damaged or closed sections using the emergency connections. The MPP serves multiple purposes and greatly improves the existing Canal system reliability for delivery during emergencies.

8.7.3. Los Vaqueros Reservoir

CCWD's Los Vaqueros Reservoir provides 160,000 AF of off-stream storage to improve water quality and to provide emergency storage for customers of CCWD. A large portion of the reservoir is reserved for emergency purposes. The reservoir provides up to 70,000 AF of emergency supply in wet years and up to 44,000 AF in dry years. The Los Vaqueros Reservoir provides a minimum of 3 to 6 months of emergency storage that may be utilized during a catastrophic interruption of CCWD's Delta supplies. When full, the reservoir provides enough storage for approximately 14 to 28 months of normal use, if necessary.

8.7.4. Short-term Supplemental Supply Options

The FWSS and Implementation Plan were undertaken to strengthen the reliability of supplies for existing customers and to bridge the gap between water supplies and projected demands. The Implementation Plan includes the purchase of water transfers in incremental blocks to meet 100 percent of demand in normal years and at least 85 percent of demand in drought conditions. Additional short-term supplies may be required in response to an emergency or catastrophic interruption of the District's supply. Potential supplemental supplies include spot market water

transfers, increased use of groundwater, emergency desalination at Mallard Slough, and increased water recycling. The legal and time constraints, availability, costs, and relative amounts of water determine how and if the supplemental source would be pursued.

Water transfers (through the State Water Bank), increased water recycling, and increased groundwater pumping were used in the drought of 1987 to 1992. CCWD purchased 6,717 AF and 10,000 AF from the State Water Bank in 1991 and 1992, respectively. During the summer of 1991, as a response to drought emergency, approximately 400 AF of recycled water was distributed to Shell and Tosco (now Tesoro) refineries for cooling tower water. A truck fill station was built to provide recycled water for construction uses. Since then, additional recycled water facilities have been constructed by DDS and CCCSD for non-potable demands including industrial cooling and irrigation supplies. Utilization of the recycled water facilities could be maximized in response to an emergency.

In response to recent drought conditions, CCWD implemented a dry-year water transfer with ECCID in 2007 to 2009 and in 2015. The current agreement between the two districts allows CCWD to purchase up to 4,000 AFY of groundwater via exchange when the CVP is in shortage situation.

Groundwater resources in Contra Costa County are limited. Outside of the District, only Byron-Bethany Irrigation District, ECCID, and the City of Brentwood have the ability to produce significant amounts of groundwater (approximately 5,000 AF annually each). The potential to increase groundwater pumping in eastern Contra Costa County would be explored in the event of an emergency.

8.8. Minimum Supply Next Three Years

Per CWC Section 10632 (a)(2), this section provides 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 CCWD's water supply.

The District's primary supply is CVP water obtained under contract with Reclamation. The M&I Water Shortage Policy defines the reliability of the District's CVP supply and provides for a minimum shortage allocation of 75 percent of adjusted historical use until irrigation allocations fall below 25 percent. Under a scenario representing three consecutive dry years over the next three years, the District's CVP supply is assumed to range from 50 to 75 percent of historical use. The District's CVP allocation during minimum public health and safety conditions is estimated to be between 50 and 60 percent.

The District's agreement with ECCID provides up to 8,200 AFY (current demand is 6,000 AFY) for service in the areas common to both Districts. An additional 4,000 AFY is available in dry years through groundwater exchange.

The District's Mallard Slough and customer (Industrial and City of Antioch) supplies from the San Joaquin River are typically not available in dry years due to poor water quality.

The District's minimum supply during the next three years, assuming three consecutive dry years, is shown in **Table 8-4W** for wholesale and **Table 8-4R** for retail. CCWD's retail area is assumed to be a customer in the wholesale area, and therefore receives the same supply reliability as the rest of CCWD's wholesale customers.

Table 8-4W: Minimum Supply Next Three Years

	2016	2017	2018
Available Water Supply (AFY)	120,500	122,400	124,300
NOTES: (a) Minimum supply availability assumptions are described in Section 8.9.			

Table 8-4R: Minimum Supply Next Three Years

	2016	2017	2018
Available Water Supply (AFY)	63,900	64,900	65,600
NOTES: (a) For UWMP reporting purposes, CCWD's retail area is considered a customer to CCWD's wholesale area and therefore receives the same supply reliability as the rest of CCWD's wholesale customers. CCWD's total minimum supply availability assumptions are described in Section 8.9.			

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9. Demand Management Measures

CWC 10631

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

(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.

(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.

Conservation has significantly lowered current water use levels and will reduce the need for future supplies. CCWD has successfully developed, implemented, and maintained an effective water conservation program since 1988. CCWD serves less water today than during the early 1990s, despite an increasing population. CCWD continues to work closely with its customers to encourage them to conserve water, eliminate water waste, and generally adapt to the possibility of drier years ahead. CCWD is also partnering with local industries in the service area to identify and implement projects to accomplish a combined objective of water, energy, and wastewater reduction for sustainability. CCWD will continue to look for new, cost-effective technologies, refine and improve existing conservation programs, and evaluate regional opportunities to implement conservation projects.

CCWD is a signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) developed by the California Urban Water Conservation Council (CUWCC).

The District implements the BMPs as prescribed in the MOU. CCWD submits annual reports to the CUWCC in accordance with the requirements of the MOU. CCWD's annual coverage reports for FY13-FY14 are included in Appendix D. In addition, the CUWCC BMP for Water Loss Control using the AWWA M36 Standard Water Audit and Water Balance is included as Appendix G.

10. Plan Adoption, Submittal, and Implementation

CWC 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.

CWC 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.

CWC 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.

CWC 10643

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

CWC 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.

CWC 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.

To encourage the active involvement of diverse social, cultural, and economic elements of the population within its service area prior to and during the preparation of the UWMP, CCWD notified its service area communities that the UWMP was being updated, coordinated with its municipal wholesale customers during preparation of the UWMP, and solicited comments from the public on its draft UWMP. A description of outreach activities is provided in Chapter 2 of this UWMP, and copies of CCWD's notification letters are provided in Appendix C.

10.1. Inclusion of All 2015 Data

CCWD conducts its reporting for UWMPs on a calendar year basis. As such, and as required in the UWMP guidebook, water use and planning data has been included for the entire calendar year of 2015.

10.2. Notice of Public Hearing

10.2.1. Notice to Cities and Counties

California Water Code Section 10621(b) stipulates that a water supplier must notify any city or county within which the supplier provides water that it is reviewing and considering changes to the UWMP. This notification must occur at least 60 days before the public hearing. CCWD held the public hearing for the UWMP on June 1, 2016. Notifications were sent out on October 12, 2015, well in advance of the 60 day requirement. A copy of this notice is provided in Appendix C.

Section 10642 of the California Water Code states that a water supplier must notice the time and place of the hearing to any city or county that the supplier provides water. It is recommended that the notice be addressed to the City Manager or County Administrator and that it include the UWMP review schedule and contact information of the Plan preparer. Notifications were sent out on May 16, 2016. A copy of this notice is provided in Appendix H.

Notifications to cities and counties in CCWD's retail and wholesale service area were provided as indicated in **Table 10-1W** and **Table 10-1R**.

Table 10-1W: Notification to Cities and Counties

☐	Supplier has notified more than 10 cities or counties in accordance with CWC 10621 (b) and 10642. Include a separate list of the cities and counties that were notified. Location of this list in the UWMP _____.	
☒	Supplier has notified 10 or fewer cities or counties. Please complete the table below.	
City Name	60 Day Notice	Notice of Public Hearing
City of Antioch	✓	✓
City of Brentwood	✓	✓
City of Martinez	✓	✓
City of Oakley	✓	✓
City of Pittsburg	✓	✓
Diablo Water District	✓	✓
Golden State Water Company (Bay Point)	✓	✓
County Name	60 Day Notice	Notice of Public Hearing
Contra Costa County	✓	✓

NOTES:

(a) Contra Costa Water District provides wholesale supply to all the agencies listed above with the exception of City of Oakley and Contra Costa County, which were notified for informational purposes.

Table 10-1R: Notification to Cities and Counties

City Name	60 Day Notice	Notice of Public Hearing
City of Clayton	✓	✓
City of Concord	✓	✓
City of Martinez	✓	✓
City of Pleasant Hill	✓	✓
City of Walnut Creek	✓	✓
County Name	60 Day Notice	Notice of Public Hearing
Contra Costa County	✓	✓

NOTES:

(a) Contra Costa Water District provides retail supply to all the agencies listed above with the exception of Contra Costa County, which was notified for informational purposes only.

In addition to providing notification to the cities and counties Contra Costa Water District serves, notification was also provided to the local wastewater agencies: Central Contra Costa Sanitary District, Delta Diablo Sanitation District, Ironhouse Sanitary District, and Mt. View Sanitary District. The District coordinated with these agencies on information related to wastewater and recycled water provided in 2015 UWMP, including a description of the wastewater collection and treatment systems in the District's service area, recycled water currently being used, quantification of the potential uses of recycled water, and the projected use of recycled water in the District's service area.

10.2.2. Notice to the Public

Government Code 6066 requires that the water supplier notify the public of the public hearing in a local newspaper once a week for two consecutive weeks. The notice must include the time and place of the hearing, as well as the location where the draft UWMP is available for public review. A notice detailing the time and place of the public hearing was published in the Contra Costa Times and the East County Times, newspapers of general circulation, on May 16 and May 23, 2016. Copies of the newspaper public notices are provided in Appendix H.

10.3. Public Hearing and Adoption

CCWD conducted a public hearing on June 1, 2016 to encourage the involvement of community groups prior to adoption of the UWMP. The public hearing included a presentation of the UWMP contents, including the SB X7-7 evaluation and compliance plan. Following the public hearing, CCWD Board of Directors adopted the final UWMP on June 15, 2016. A signed copy of the resolution is provided in Appendix I.

10.4. Plan Submittal

The final UWMP is to be submitted to DWR and copies provided to other agencies involved in the preparation of the UWMP within 30 days following adoption and by July 1, 2016. As required by DWR, UWMP submittal will be done electronically through WUE data, an online submittal tool. No later than 30 days after adoption, CCWD will provide copies of the adopted UWMP to the following entities:

- California State Library
- Any city or county within CCWD's service area.

10.5. Public Availability

Not later than 30 days after filing a copy of the UWMP with DWR, CCWD will make the adopted UWMP publicly available by placing a copy at the front desk of CCWD's office and posting it on CCWD's website (www.ccwater.com).

10.6. Amending an Adopted UWMP

If the adopted UWMP is amended, CCWD will follow each of the steps for notification, public hearing, adoption, and submittal for the amended plan.

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11. References

- Association of Bay Area Governments (ABAG). 2013. Bay Area Plan Projections 2013. (December 2013).
- ABAG. 2013. San Francisco Housing Needs Plan 2014-2022. (July 2013).
- California Department of Water Resources. 2015 Urban Water Management Plan Guidebook for Urban Water Suppliers. (March 2016).
- Contra Costa Water District. Ten-Year Capital Improvement Program for Fiscal Years 2017 - 2026. (February 2016).
- Contra Costa Water District. Future Water Supply Study Update. (December 2002).
- Contra Costa Water District. Future Water Supply Implementation Final Environmental Impact Report. (February 1999).
- Contra Costa Water District. Seismic Reliability Improvement Project. (1997).
- Contra Costa Water District. Future Water Supply Study. (August 1996).
- Contra Costa Water District. Emergency Operations Plan.
- United States Bureau of Reclamation. Central Valley Project M&I Water Shortage Policy. (November 2015).
- United States Bureau of Reclamation. Long-Term Renewal Contract Between the United States and Contra Costa Water District Providing For Water Service and For Facilities Repayment. (May 2005).

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Appendix A

DWR Checklist

Checklist Arranged by Subject

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
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 2.1
10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.5.2	Section 2.5
10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	Plan Preparation	Section 2.5.2	Section 2.5
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	Section 3.1 and Section 3.2
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	Section 3.3
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	Section 3.4
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	Section 3.4
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 Section 5.1
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
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
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 4.4
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	Section 5.2 and Appendix E

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
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 Appendix E
10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	Section 5.2
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	Section 5.4 and Appendix E
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	N/A
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	Section 5.6
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 5.3 and Appendix E
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	Chapter 6
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
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	N/A
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	N/A
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	N/A

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	N/A
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	N/A
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	Section 6.9
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
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
10631(h)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	Section 6.6
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	Section 2.5
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	Section 2.5
10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	Section 6.5.1
10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	Section 6.5.2
10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.5.2.2	Section 6.5.2

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	Section 6.5.3 and Section 6.5.4
10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	Section 6.5.4
10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.5.4	Section 6.5.4
10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.5.5	Section 6.5.5
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	Section 6.5.5
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 7.4
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	Section 7.1
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	Section 7.2
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	Section 7.1
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 7.1
10635(a)	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3	Section 7.3
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

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
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
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
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	Section 8.2
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	Section 8.4
10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	Section 8.3
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	Section 8.6
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	Section 8.7
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
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	N/A
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	N/A
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	Chapter 9

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
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	
10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	Section 10.2.1
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	Section 10.4
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
10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	Section 10.2.2 and Section 10.3 and Section
10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2.1	Section 10.2.1 and Appendix I
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
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
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
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
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

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Appendix B

Regional Alliance SB X7-7 Analysis

SB X7-7 Baselines and Targets – Regional Alliance

Beginning with the 2010 UWMP, the Water Conservation Bill of 2009, Senate Bill X7-7 (SB X7-7), required each urban retail water supplier to include the following in its UWMP:

- Baseline daily per capita water use – how much water is used within an urban water supplier’s distribution system area on a per capita basis. It is determined using water use and population estimates from a defined range of years.
- Urban water use target – how much water is planned to be delivered in 2020 to each resident within an urban water supplier’s distribution system area, taking into account water conservation practices that currently are and plan to be implemented.
- Interim urban water use target – the planned daily per capita water use in 2015, a value halfway between the baseline daily per capita water use and the urban water use target.

CCWD is both a retail and wholesale water supplier. CCWD fulfilled its SB X7-7 reporting requirements for its retail treated water service area in Section 5 of the 2015 UWMP. Section 5 demonstrates that CCWD has met its interim 2015 target on an individual basis.

SB X7-7 allows water suppliers to meet its interim 2015 and 2020 targets on an individual and/or Regional Alliance basis. This appendix serves as a Regional Alliance Report and provides the SB X7-7 analysis for CCWD’s wholesale service area. CCWD is participating in a Regional Alliance that includes its retail service area and wholesale municipal customers (Cities of Antioch, Pittsburg, Martinez, Golden State Water Company [Bay Point], and Diablo Water District).

As required by DWR, CCWD submitted a letter to DWR on June 8, 2011 stating that a Regional Alliance was formed and providing a list of the water supplier members. A copy of this letter is provided at the end of this appendix. Additionally, CCWD’s wholesale municipal customers have provided statements in their 2010 and 2015 UWMPs that they are members of CCWD’s Regional Alliance.

In the 2010 UWMP, CCWD calculated its Regional Alliance targets through the use of a selected target method and Department of Finance population data available at the time. SB X7-7 allows water suppliers to update their calculation methodologies and water use target in the 2015 UWMP. This appendix presents CCWD’s updated interim 2015 and 2020 targets for the Regional Alliance based on the most recent 2010 US Census data.

CCWD has selected Option 3 as outlined in DWR’s Methodologies guidebook to complete the Regional Alliance analysis. The approach for Option 3 is to calculate regional gross water use or population directly for the entire Regional Alliance area, and use these data to derive a regional base daily per capita use and a regional water use target. 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.

Similar to the retail SB X7-7 analysis provided in Section 5, CCWD has completed the following steps and the required SB X7-7 RA3 tables to meet the UWMP requirements for its Regional Alliance:

1. Determine Base Daily Per Capita Water Use
2. Determine 2020 Urban Water Use Target
3. Determine Interim 2015 Urban Water Use Target
4. Demonstrate Compliance with Interim 2015 Urban Water Use Target. It should be noted that CCWD has already demonstrated in Section 5 that it has achieved its interim 2015 target.

SB X7-7 RA3 Table 0 provides the units of measure that will be used throughout this section.

SB X7-7 RA3 Table 0: Units of Measure Used by Regional Alliance
Acre Feet

1 Determine Base Daily Per Capita Water Use

1.1 Baseline Period

As defined in CWC Section 10608.12(b), base daily per capita water use is the average gross water use reported in gallons per capita per day (gpcd) and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010. For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water, the water supplier has the option to extend the base period up to an additional five years to a maximum continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

Additionally, as described in CWC Section 10608.22, water agencies must achieve a minimum daily per capita use reduction of 5 percent of base daily per capita water use, calculated using a five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

Determination of the 10-year and 5-year baseline periods for the Regional Alliance is shown in **SB X7-7 RA3 Table 1**. Note that the 2008 total volume of delivered recycled water excludes recycled water used for wetland and wildlife habitat and wastewater treatment plant use.

SB X7-7 RA3 Table 1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10 Year Baseline Period	2008 total water deliveries	122,330	AF
	2008 total volume of delivered recycled water	7,560	AF
	2008 recycled water as a percent of total deliveries	6	percent
	Number of years in baseline period ¹	10	years
	Year beginning baseline period range	1995	
	Year ending baseline period range ²	2004	
5-year baseline period	Number of years in baseline period	5	years
	Year beginning baseline period range	2004	
	Year ending baseline period range ³	2008	

NOTES:

(a) This table only reflects recycled water that is offsetting a potable or raw water delivery in CCWD's service area. It excludes recycled water used for wetland and wildlife habitat and wastewater treatment plant use.

1.2 Population

CCWD developed total service area population estimates according to guidance provided in Methodology 2 of DWR's February 2016 "*Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use.*" The method used to determine population is also indicated in **SB X7-7 RA3 Table 2**.

CCWD utilized its GIS database and the following sources to calculate population data:

- U.S. Census Bureau (Census) data from 1990, 2000, and 2010
- Data published by the California Department of Finance (DOF) for non-census years

SB X7-7 RA3 Table 2: Method for Population Estimates	
Method Used to Determine Population	
☒	Regional Alliance is calculating regional population directly for the entire Regional Alliance area.
Method Used to Determine Population	
☒	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

The SB X7-7 evaluation presented in this section is for the Regional Alliance area, which includes CCWD's retail service area and areas served by wholesale deliveries from CCWD (Cities of Antioch, Pittsburg, Martinez, Golden State Water Company [Bay Point], and Diablo Water District). The majority of the Regional Alliance area matches City boundaries. For the areas that does not exactly match City boundaries, CCWD developed a proportional area approach and applied it to DOF population estimates. CCWD's service area covers a total area of more than 140,000 acres, including the largely unpopulated Los Vaqueros watershed of 19,100 acres. For the proportional area estimation method, the LV watershed area was subtracted from the Regional Alliance area. A map showing CCWD's service area is provided as **Figure 3-1** in the UWMP. Using this approach, CCWD determined the baseline and compliance year population for the Regional Alliance area as shown in **SB X7-7 RA3 Table 3**.

SB X7-7 Table 3: Service Area Population		
☒		Regional Alliance is calculating regional population directly for the entire Regional Alliance area.
Year		Population
10-Year Baseline Population		
Year 1	1995	379,690
Year 2	1996	383,790
Year 3	1997	390,970
Year 4	1998	399,770
Year 5	1999	407,990
Year 6	2000	413,960
Year 7	2001	419,650
Year 8	2002	426,450
Year 9	2003	430,110
Year 10	2004	432,690
5-Year Baseline Population		
Year 1	2004	432,690
Year 2	2005	432,060
Year 3	2006	428,840
Year 4	2007	430,550
Year 5	2008	434,550
2015 Compliance Year Population		
2015		466,410
NOTES: Population was determined using Department of Finance data. Population estimates exclude the City of Brentwood, which is not part of the Regional Alliance.		

1.3 Gross Water Use

The gross water use is defined in CWC Section 10608.12(g) as the total volume of water entering the distribution system excluding recycled water. The gross water use for the Regional Alliance area was determined as the sum of the total water deliveries into CCWD's untreated water conveyance facility (Contra Costa Canal), which serves CCWD's retail service area and wholesale customers, plus wholesale customers' water use from other local water supply sources. These water deliveries are metered and do not include any recycled water use. There were no optional adjustments or deductions made.

The Regional Alliance gross water use for the 10-year base period of 1995 to 2004 are presented in **SB X7-7 RA3 Tables 4-A** for each of the supply sources and summarized in **SB X7-7 RA3 Table 4**.

SB X7-7 RA3 Table 4-A: Annual Gross Water Use for Regional Alliance CCWD			
Name of Source		Central Valley Project	
This water source is:		A purchased or imported source	
Baseline Year		Volume Entering Into Distribution System	Corrected Volume Entering Distribution System
10 Year Baseline – Water into Distribution System			
Year 1	1995	104,500	104,500
Year 2	1996	111,780	111,780
Year 3	1997	116,670	116,670
Year 4	1998	98,960	98,960
Year 5	1999	109,060	109,060
Year 6	2000	113,290	113,290
Year 7	2001	117,990	117,990
Year 8	2002	116,740	116,740
Year 9	2003	110,140	110,140
Year 10	2004	119,100	119,100
5 Year Baseline - Water into Distribution System			
Year 1	2004	119,100	119,100
Year 2	2005	110,310	110,310
Year 3	2006	108,810	108,810
Year 4	2007	115,720	115,720
Year 5	2008	114,020	114,020
2015 Compliance Year - Water into Distribution System			
2015		85,850	85,850
NOTES: No optional meter error adjustment was made, therefore corrected volume equals volume entering distribution system.			

SB X7-7 RA3 Table 4-A: Annual Gross Water Use for Regional Alliance City of Antioch			
Name of Source		City of Antioch – San Joaquin River	
This water source is:		Supplier's own water source	
Baseline Year		Volume Entering Into Distribution System	Corrected Volume Entering Distribution System
10 Year Baseline – Water into Distribution System			
Year 1	1995	5,880	5,880
Year 2	1996	5,490	5,490
Year 3	1997	4,970	4,970
Year 4	1998	12,610	12,610
Year 5	1999	8,250	8,250
Year 6	2000	5,920	5,920
Year 7	2001	4,550	4,550
Year 8	2002	7,050	7,050
Year 9	2003	8,740	8,740
Year 10	2004	5,530	5,530
5 Year Baseline - Water into Distribution System			
Year 1	2004	5,530	5,530
Year 2	2005	7,990	7,990
Year 3	2006	7,960	7,960
Year 4	2007	4,810	4,810
Year 5	2008	5,480	5,480
2015 Compliance Year - Water into Distribution System			
2015		1,450	1,450
NOTES: No optional meter error adjustment was made, therefore corrected volume equals volume entering distribution system.			

SB X7-7 RA3 Table 4-A: Annual Gross Water Use for Regional Alliance City of Pittsburg			
Name of Source		City of Pittsburg – Groundwater	
This water source is:		Supplier's own water source	
Baseline Year		Volume Entering Into Distribution System	Corrected Volume Entering Distribution System
10 Year Baseline – Water into Distribution System			
Year 1	1995	1,820	1,820
Year 2	1996	1,610	1,610
Year 3	1997	1,860	1,860
Year 4	1998	1,450	1,450
Year 5	1999	1,230	1,230
Year 6	2000	1,337	1,337
Year 7	2001	240	240
Year 8	2002	1,020	1,020
Year 9	2003	590	590
Year 10	2004	850	850
5 Year Baseline - Water into Distribution System			
Year 1	2004	850	850
Year 2	2005	1,450	1,450
Year 3	2006	1,750	1,750
Year 4	2007	1,950	1,950
Year 5	2008	1,650	1,650
2015 Compliance Year - Water into Distribution System			
2015		1,210	1,210
NOTES: No optional meter error adjustment was made, therefore corrected volume equals volume entering distribution system.			

SB X7-7 RA3 Table 4-A: Annual Gross Water Use for Regional Alliance Diablo Water District			
Name of Source		Diablo Water District – Groundwater	
This water source is:		Supplier's own water source	
Baseline Year		Volume Entering Into Distribution System	Corrected Volume Entering Distribution System
10 Year Baseline – Water into Distribution System			
Year 1	1995	-	-
Year 2	1996	-	-
Year 3	1997	-	-
Year 4	1998	-	-
Year 5	1999	-	-
Year 6	2000	-	-
Year 7	2001	-	-
Year 8	2002	-	-
Year 9	2003	-	-
Year 10	2004	-	-
5 Year Baseline - Water into Distribution System			
Year 1	2004	-	-
Year 2	2005	-	-
Year 3	2006	220	220
Year 4	2007	940	940
Year 5	2008	930	930
2015 Compliance Year - Water into Distribution System			
2015		770	770
NOTES: No optional meter error adjustment was made, therefore corrected volume equals volume entering distribution system.			

SB X7-7 RA3 Table 4-A: Annual Gross Water Use for Regional Alliance Golden State Water Company (Bay Point)			
Name of Source		Golden State Water Company (Bay Point) – Groundwater	
This water source is:		Supplier's own water source	
Baseline Year		Volume Entering Into Distribution System	Corrected Volume Entering Distribution System
10 Year Baseline – Water into Distribution System			
Year 1	1995	240	240
Year 2	1996	240	240
Year 3	1997	240	240
Year 4	1998	240	240
Year 5	1999	200	200
Year 6	2000	270	270
Year 7	2001	250	250
Year 8	2002	230	230
Year 9	2003	230	230
Year 10	2004	220	220
5 Year Baseline - Water into Distribution System			
Year 1	2004	220	190
Year 2	2005	190	270
Year 3	2006	270	270
Year 4	2007	270	250
Year 5	2008	250	220
2015 Compliance Year - Water into Distribution System			
2015		190	190
NOTES: No optional meter error adjustment was made, therefore corrected volume equals volume entering distribution system.			

SB X7-7 RA3 Table 4: Annual Gross Water Use for Regional Alliance			
Baseline Year		Volume Into Distribution System	Annual Gross Water Use
10 Year Baseline - Gross Water Use			
Year 1	1995	112,440	112,440
Year 2	1996	119,120	119,120
Year 3	1997	123,740	123,740
Year 4	1998	113,260	113,260
Year 5	1999	118,740	118,740
Year 6	2000	120,820	120,820
Year 7	2001	123,030	123,030
Year 8	2002	125,040	125,040
Year 9	2003	119,700	119,700
Year 10	2004	125,700	125,700
10 Year Average Gross Water Use			120,160
5 Year Baseline - Gross Water Use			
Year 1	2004	125,700	125,700
Year 2	2005	119,940	119,940
Year 3	2006	119,010	119,010
Year 4	2007	123,670	123,670
Year 5	2008	122,300	122,300
5 Year Average Gross Water Use			122,120
2015 Compliance Year - Gross Water Use			
2015		89,470	89,470
NOTES: No optional adjustments were made, therefore Annual Gross Water Use equals the Volume Into Distribution System.			

1.5 Baseline Gallons Per Capita Per Day

SB X7-7 RA3 Table 5 calculates the 5-year and 10-year baselines using the data population from SB X7-7 RA3 Table 3 and gross water use from SB X7-7 RA3 Table 4.

SB X7-7 RA3 Table 5: Gallons per Capita per Day (GPCD) for Regional Alliance				
Baseline Year		Service Area Population	Annual Gross Water Use	Daily Per Capita Water Use (GPCD)
10 Year Baseline GPCD				
Year 1	1995	379,690	112,440	264
Year 2	1996	383,790	119,120	277
Year 3	1997	390,970	123,740	283
Year 4	1998	399,770	113,260	253
Year 5	1999	407,990	118,740	260
Year 6	2000	413,960	120,820	261
Year 7	2001	419,650	123,030	262
Year 8	2002	426,450	125,040	262
Year 9	2003	430,110	119,700	248
Year 10	2004	432,690	125,700	259
10 Year Average Baseline GPCD				263
5 Year Baseline GPCD				
Baseline Year		Service Area Population	Gross Water Use	Daily Per Capita Water Use (GPCD)
Year 1	2004	432,690	125,700	259
Year 2	2005	432,060	119,940	248
Year 3	2006	428,840	119,010	248
Year 4	2007	430,550	123,670	256
Year 5	2008	434,550	122,300	251
5 Year Average Baseline GPCD				253
2015 Compliance Year GPCD				
2015		466,410	89,470	171

SB X7-7 RA3 Table 6 presents the calculated gpcd for the baseline years and compliance year. The Regional Alliance's 10-year baseline gpcd is 263 gpcd and the 5-year baseline is 253 gpcd. In 2015, the Regional Alliance's gpcd was 171 gpcd.

SB X7-7 RA3 Table 6: Gallons per Capita per Day for Regional Alliance	
10 Year Baseline GPCD	263
5 Year Baseline GPCD	253
2015 Compliance Year GPCD	171

2 Determine 2020 Urban Water Use Target

The CWC Section 10608.20(b) provides four methods for calculating the 2020 water use target. These methods are outlined in Section 5.7 of DWR's Guidebook. CCWD selected Target Method 1 to determine its Regional Alliance 2020 water use target, as shown in **SB X7-7 RA3 Table 7**. Target Method 1 requires a straight 20 percent reduction from the Regional Alliance 10-year baseline GPCD.

SB X7-7 RA3 Table 7: 2020 Target Method for Regional Alliance	
☒	Method 1
☐	Method 2
☐	Method 3
☐	Method 4

Using Target Method 1, the Regional Alliance's 2020 Target gpcd is 210 gpcd, as noted in **SB X7-7 RA3 Table 7A** below.

SB X7-7 Table 7-A: Target Method 1 - 20% Reduction for Regional Alliance	
10-Year Baseline GPCD	2020 Target GPCD
263	210

As described in CWC Section 10608.22, water agencies must achieve a minimum daily per capita use reduction of 5 percent of base daily per capita water use, calculated using a five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010. **SB X7-7 RA3 Table 7-F** confirms the minimum reduction required for 2020 water use target and shows the Regional Alliance's confirmed 2020 target is 210 gpcd.

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target for Regional Alliance			
5 Year Baseline GPCD	Maximum 2020 Target	Calculated 2020 Target	Confirmed 2020 Target
253	240	210	210

3 Determine Interim 2015 Water Use Target

The interim urban water use target is defined in the CWC Section 10608.12 (j) as the midpoint between the base daily per capita water use and the urban water use target for 2020. As presented in **SB X7-7 RA3 Table 8**, the 2015 interim water use target for the Regional Alliance is calculated to be 236 gpcd.

SB X7-7 Table 8: 2015 Interim Target GPCD for Regional Alliance		
Confirmed 2020 Target	10-year Baseline GPCD	2015 Interim Target GPCD
210	263	236

4 Compliance with 2015 Water Use Target

CCWD provides water conservation programs for its total service area, including both retail and wholesale customers. Due to the success of past and current water use efficiency efforts in the Regional Alliance area, the actual 2015 gpcd for the Regional Alliance was 171 gpcd, which meets the interim 2015 target and demonstrates that the Regional Alliance is on track with meeting its 2020 target, as shown in **SB X7-7 RA3 Table 9**.

SB X7-7 allows water supplier to meet the SB X7-7 requirements on an individual (retail) basis and/or Regional Alliance basis. In Section 5, CCWD demonstrated that it meets the interim 2015 target in its retail treated water service area. Therefore, the Regional Alliance analysis is being provided as an optional second method of compliance with the SB X7-7 requirements.

SB X7-7 RA3 Table 9: 2015 Compliance for Regional Alliance		
Actual 2015 GPCD	2015 Interim Target GPCD	Did Supplier Achieve Targeted Reduction for 2015?
171	236	Yes
NOTES: No optional adjustments were made to the actual 2015 GPCD for extraordinary events, weather normalization, or economic reasons.		

5 Measures, Programs, and Policies to Achieve SB X7-7 Water Use Reduction

The Regional Alliance that includes CCWD's retail and wholesale service area has met the interim 2015 water use target and has already made significant progress toward meeting its 2020 water use target. Per capita consumption is anticipated to increase in the coming years as a result of drought rebound and improving economic conditions. Given the uncertainty in the level and timing

of rebound in water use, the Regional Alliance will continue to collaborate on a flexible plan to ensure it achieves the 2020 target.

To encourage water savings by its customers, CCWD will continue to implement its Water Conservation Program that has been active for over 20 years and is offered throughout CCWD's entire service area. CCWD's Water Conservation Program is designed to reduce long-term water demand in conformance with the CCWD's FWSS. CCWD's total demand has been reduced by an estimated 14,000 acre-feet per year over the past two decades as a result of passive and active conservation activities. CCWD anticipates an additional 10,000 acre-feet per year in water savings will be achieved from now to 2040 through future passive and active conservation activities. The Water Conservation Program also played a key role in helping its retail and wholesale customers meet the State-mandated conservation requirements in the 2015 Drought Management Program and will be an important tool for the Regional Alliance in meeting its 2020 urban water use target. Details on CCWD's Water Conservation Program are provided in Chapter 9 and Appendix D of the UWMP.

In addition to active conservation activities implemented through CCWD's Conservation Program, passive conservation is also achieved through state and local efficiency codes. Efficiency codes that require efficient fixtures and appliances, grant funding to promote water conservation, residential weather-based irrigation controllers, and efficient landscape practices are expected to achieve additional water use reductions in CCWD's service area.

Future recycled water projects within CCWD's service area will also contribute towards achieving water use reduction goals. Potential opportunities include recycled water projects for agricultural irrigation, urban landscape irrigation, industrial reuse, and groundwater recharge. Section 6.5.4.1 of the UWMP includes a more detailed discussion of current and future recycled water opportunities; **Table 6-4W** and **Table 6-4R** in the UWMP provide current and projected future use of recycled water in CCWD's wholesale and retail service areas, respectively. It is anticipated that by the year 2040, recycled water use will be approximately 18,000 AFY in CCWD's service area.

CCWD will continue to work collaboratively with municipalities in its service area to encourage recycled water use in future development projects. For example, the City of Concord Community Reuse Plan (Reuse Plan) proposes to redevelop approximately 5,000 acres of the Concord Naval Weapons Station, which is located within CCWD's treated water service area. CCWD staff worked with the City of Concord throughout the planning process to incorporate significant water conservation measures, low water demand development, and recycled water standards into the CNWS Reuse Plan. These standards have reduced the project's potable water demand projections by more than 50 percent. It is estimated that the project will utilize recycled water in an amount equal to or greater than the net potable water demand. There are also opportunities to provide up to an additional 3,000 acre-feet annually of recycled water if the planned open spaces and parks are irrigated.



CONTRA COSTA
WATER DISTRICT

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June 8, 2011

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Bette Boatman
Lisa M. Borba
John A. Burgh

Jerry Brown
General Manager

Mr. Peter Brostrom
Urban Water Use and Efficiency Branch
California Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236

Subject: 2010 Urban Water Management Plan – Regional Alliance

Dear Mr. Brostrom:

The purpose of this letter is to inform the California Department of Water Resources of the regional alliance Contra Costa Water District (CCWD) has formed with its wholesale municipal customers. The regional alliance includes the following members:

- Contra Costa Water District
- City of Antioch
- City of Martinez
- City of Pittsburg
- Diablo Water District
- Golden State Water Company (Bay Point)

Each member of the regional alliance has prepared an individual Urban Water Management Plan that includes individual baseline and water use target analyses required by the Water Conservation Bill of 2009 (SBX 7-7) as well as acknowledgement that the agency is participating in the CCWD regional alliance. The regional alliance analysis was prepared by CCWD and is included in Appendix H of CCWD's 2010 Urban Water Management Plan.

Mr. Peter Brostrom
June 8, 2011
Page 2

If you have any questions or concerns, please feel free to contact me at (925) 688-8310.

Sincerely,

A handwritten signature in cursive script that reads "Jeff Quimby".

Jeff Quimby
Principal Engineer

KL:cmn

cc: Mr. Phil Harrington, City of Antioch
Mr. Alan Pellegrini, City of Martinez
Mr. Walter Pease, City of Pittsburg
Mr. Mike Yeraka, Diablo Water District
Mr. Ernie Gisler, Golden State Water Company

SB X7-7 RA3 Table 0: Units of Measure Used by Regional Alliance*(select one from the drop down list)*

Acre Feet

NOTES:

SB X7-7 RA3 Table-1: Baseline Period Ranges for Regional Alliance

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	122,330	Acre Feet
	2008 total volume of delivered recycled water	7,560	Acre Feet
	2008 recycled water as a percent of total deliveries	6.18%	Percent
	Number of years in baseline period ¹	10	Years
	Year beginning baseline period range	1995	
	Year ending baseline period range ²	2004	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	
	Year ending baseline period range ³	2008	
¹ If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.			
² The ending year must be between December 31, 2004 and December 31, 2010.			
³ The ending year must be between December 31, 2007 and December 31, 2010.			
NOTES:			

SB X7-7 RA3 Table 2: Method for Population Estimates for Regional Alliance

☐	Regional Alliance is aggregating population supplied from each participating agency. This table is required for each participating agency. *
☒	Regional Alliance is calculating regional population directly for the entire regional alliance area. This table will be completed by the Alliance.

Method Used to Determine Population *(may select 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

**If the Regional Alliance does not calculate regional population or regional gross water directly, each participating agency must submit population and gross water tables, SB X7-7 Tables 0 through 6, as applicable, to show each agency's calculations. These individual agency tables will be submitted with the individual or Regional Urban Water Management Plan.*

NOTES:

**SB X7-7 RA3 Table 3: Service Area Population
for Regional Alliance**

☐	Regional Alliance is aggregating population supplied from each participating agency. This table is required for each participating agency* and for the Alliance.
☒	Regional Alliance is calculating regional population directly for the entire regional alliance area. This table will be completed by the Alliance.

Year		Population
10 to 15 Year Baseline Population		
Year 1	1995	379,690
Year 2	1996	383,790
Year 3	1997	390,970
Year 4	1998	399,770
Year 5	1999	407,990
Year 6	2000	413,960
Year 7	2001	419,650
Year 8	2002	426,450
Year 9	2003	430,110
Year 10	2004	432,690
Year 11	2005	
Year 12	2006	
Year 13	2007	
Year 14	2008	
Year 15	2009	
5 Year Baseline Population		
Year 1	2004	432,690
Year 2	2005	432,060
Year 3	2006	428,840
Year 4	2007	430,550
Year 5	2008	434,550
2015 Compliance Year Population		
2015		466,410

**If the Regional Alliance does not calculate regional population or regional gross water directly, each participating agency must submit population and gross water tables, SB X7-7 Tables 0 through 6, as applicable, to show each agency's calculations. These individual agency tables will be submitted with the individual or Regional Urban Water Management Plan.*

NOTES:

SB X7-7 RA3 Table 4: Annual Gross Water Use for Regional Alliance*

☐	Regional Alliance is aggregating gross water uses, as reported by each participating agency. SB X7-7 Tables 4 and 4-A are required for each participating agency.² SB X7-7 Tables 4-B, 4-C, and 4-D are required for agencies that are using the deductions corresponding to those tables.² The Alliance will provide a table that aggregates all agencies' gross water use.
☒	Regional Alliance is calculating regional gross water use directly for the entire Regional Alliance area. The Alliance will complete SB X7-7 Tables 4 and 4-A. SB X7-7 7 Tables 4-B, 4-C, and 4-D are required if the Alliance is using the deductions corresponding to those tables.

Baseline Year <i>Fm SB X7-7 Table 3</i>		Volume Into Distribution System ¹ <i>From SB X7-7 Table(s) 4-A</i>	Deductions					Annual Gross Water Use ²
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water <i>From SB X7-7 Table 4- B</i>	Water Delivered for Agricultural Use	Process Water <i>From SB X7-7 Table(s) 4-D</i>	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1995	112,440						112,440
Year 2	1996	119,120						119,120
Year 3	1997	123,740						123,740
Year 4	1998	113,260						113,260
Year 5	1999	118,740						118,740
Year 6	2000	120,820						120,820
Year 7	2001	123,030						123,030
Year 8	2002	125,040						125,040
Year 9	2003	119,700						119,700
Year 10	2004	125,700						125,700
<i>Year 11</i>	2005							-
<i>Year 12</i>	2006							-
<i>Year 13</i>	2007							-
<i>Year 14</i>	2008							-
<i>Year 15</i>	2009							-
10 - 15 year baseline average gross water use								120,160
5 Year Baseline - Gross Water Use								
Year 1	2004	125,700						125,700
Year 2	2005	119,940						119,940
Year 3	2006	119,010						119,010
Year 4	2007	123,690						123,690
Year 5	2008	122,330						122,330
5 year baseline average gross water use								122,130
2015 Compliance Year - Gross Water Use								
2015		89,470						89,470

¹ NOTE that the units of measure must remain consistent throughout the Regional Alliance reporting and shall reflect the unit of measure selected by the Alliance in Table 0.

² If the Regional Alliance does not calculate regional population or regional gross water directly, each participating agency must submit population and gross water tables, SB X7-7 Tables 0 through 6, as applicable, to show each agency's calculations. These individual agency tables will be submitted with the individual or Regional Urban Water Management Plan.

SB X7-7 RA3 Table 4-A: Volume Entering the Distribution System(s) for Regional Alliance

Complete one table for each source.

☐	Regional Alliance is aggregating gross water volumes that have been supplied from each participating agency. This table (and any needed duplicates) is required for each participating agency. ¹ The Alliance will provide a table that aggregates all agencies' gross water use.
☒	Regional Alliance is calculating regional gross water use directly for the entire Regional Alliance area. This table (and any needed duplicates) will be completed by the Alliance.

Name of Source	Central Valley Project
-----------------------	------------------------

This water source is:

☐	The supplier's own water source
☒	A purchased or imported source

Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System	Meter Error Adjustment ² <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System			
Year 1	1995	104,500	104,500
Year 2	1996	111,780	111,780
Year 3	1997	116,670	116,670
Year 4	1998	98,960	98,960
Year 5	1999	109,060	109,060
Year 6	2000	113,290	113,290
Year 7	2001	117,990	117,990
Year 8	2002	116,740	116,740
Year 9	2003	110,140	110,140
Year 10	2004	119,100	119,100
Year 11	2005		-
Year 12	2006		-
Year 13	2007		-
Year 14	2008		-
Year 15	2009		-
5 Year Baseline - Water into Distribution System			
Year 1	2004	119,100	119,100
Year 2	2005	110,310	110,310
Year 3	2006	108,810	108,810
Year 4	2007	115,720	115,720
Year 5	2008	114,020	114,020
2015 Compliance Year - Water into Distribution System			
2015	85,850		85,850

SB X7-7 RA3 Table 4-A: Volume Entering the Distribution System(s) for Regional Alliance

Complete one table for each source.

☐	Regional Alliance is aggregating gross water volumes that have been supplied from each participating agency. This table (and any needed duplicates) is required for each participating agency. ¹ The Alliance will provide a table that aggregates all agencies' gross water use.
☒	Regional Alliance is calculating regional gross water use directly for the entire Regional Alliance area. This table (and any needed duplicates) will be completed by the Alliance.

Name of Source City of Antioch - San Joaquin River

This water source is:

☒	The supplier's own water source
☐	A purchased or imported source

Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System	Meter Error Adjustment ² <i>Optional</i> (+/-)	Corrected Volume Entering Distribution System
--	--	--	---

10 to 15 Year Baseline - Water into Distribution System

Year 1	1995	5,880	5,880
Year 2	1996	5,490	5,490
Year 3	1997	4,970	4,970
Year 4	1998	12,610	12,610
Year 5	1999	8,250	8,250
Year 6	2000	5,920	5,920
Year 7	2001	4,550	4,550
Year 8	2002	7,050	7,050
Year 9	2003	8,740	8,740
Year 10	2004	5,530	5,530
Year 11	2005		-
Year 12	2006		-
Year 13	2007		-
Year 14	2008		-
Year 15	2009		-

5 Year Baseline - Water into Distribution System

Year 1	2004	5,530	5,530
Year 2	2005	7,990	7,990
Year 3	2006	7,960	7,960
Year 4	2007	4,810	4,810
Year 5	2008	5,480	5,480

2015 Compliance Year - Water into Distribution System

2015	1,450		1,450
-------------	-------	--	-------

SB X7-7 RA3 Table 4-A: Volume Entering the Distribution System(s) for Regional Alliance

Complete one table for each source.

☐	Regional Alliance is aggregating gross water volumes that have been supplied from each participating agency. This table (and any needed duplicates) is required for each participating agency. ¹ The Alliance will provide a table that aggregates all agencies' gross water use.
☒	Regional Alliance is calculating regional gross water use directly for the entire Regional Alliance area. This table (and any needed duplicates) will be completed by the Alliance.

Name of Source	City of Pittsburgh - Groundwater
-----------------------	----------------------------------

This water source is:

☒	The supplier's own water source
☐	A purchased or imported source

Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System	Meter Error Adjustment ² <i>Optional</i> (+/-)	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System			
Year 1	1995	1,820	1,820
Year 2	1996	1,610	1,610
Year 3	1997	1,860	1,860
Year 4	1998	1,450	1,450
Year 5	1999	1,230	1,230
Year 6	2000	1,337	1,337
Year 7	2001	240	240
Year 8	2002	1,020	1,020
Year 9	2003	590	590
Year 10	2004	850	850
Year 11	2005		-
Year 12	2006		-
Year 13	2007		-
Year 14	2008		-
Year 15	2009		-
5 Year Baseline - Water into Distribution System			
Year 1	2004	850	850
Year 2	2005	1,450	1,450
Year 3	2006	1,750	1,750
Year 4	2007	1,950	1,950
Year 5	2008	1,650	1,650
2015 Compliance Year - Water into Distribution System			
2015	1,210		1,210

SB X7-7 RA3 Table 4-A: Volume Entering the Distribution System(s) for Regional Alliance

Complete one table for each source.

☐	Regional Alliance is aggregating gross water volumes that have been supplied from each participating agency. This table (and any needed duplicates) is required for each participating agency. ¹ The Alliance will provide a table that aggregates all agencies' gross water use.
☒	Regional Alliance is calculating regional gross water use directly for the entire Regional Alliance area. This table (and any needed duplicates) will be completed by the Alliance.

Name of Source Diablo Water District - Groundwater

This water source is:

☒	The supplier's own water source
☐	A purchased or imported source

Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System	Meter Error Adjustment ² <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System			
Year 1	1995	-	-
Year 2	1996	-	-
Year 3	1997	-	-
Year 4	1998	-	-
Year 5	1999	-	-
Year 6	2000	-	-
Year 7	2001	-	-
Year 8	2002	-	-
Year 9	2003	-	-
Year 10	2004	-	-
Year 11	2005		-
Year 12	2006		-
Year 13	2007		-
Year 14	2008		-
Year 15	2009		-
5 Year Baseline - Water into Distribution System			
Year 1	2004	-	-
Year 2	2005	-	-
Year 3	2006	220	220
Year 4	2007	940	940
Year 5	2008	930	930
2015 Compliance Year - Water into Distribution System			
2015	770		770

SB X7-7 RA3 Table 4-A: Volume Entering the Distribution System(s) for Regional Alliance

Complete one table for each source.

☐	Regional Alliance is aggregating gross water volumes that have been supplied from each participating agency. This table (and any needed duplicates) is required for each participating agency. ¹ The Alliance will provide a table that aggregates all agencies' gross water use.
☒	Regional Alliance is calculating regional gross water use directly for the entire Regional Alliance area. This table (and any needed duplicates) will be completed by the Alliance.

Name of Source Golden State Water Company - Groundwater

This water source is:

☒	The supplier's own water source
☐	A purchased or imported source

Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System	Meter Error Adjustment ² <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System			
Year 1	1995	240	240
Year 2	1996	240	240
Year 3	1997	240	240
Year 4	1998	240	240
Year 5	1999	200	200
Year 6	2000	270	270
Year 7	2001	250	250
Year 8	2002	230	230
Year 9	2003	230	230
Year 10	2004	220	220
Year 11	2005		-
Year 12	2006		-
Year 13	2007		-
Year 14	2008		-
Year 15	2009		-
5 Year Baseline - Water into Distribution System			
Year 1	2004	220	220
Year 2	2005	190	190
Year 3	2006	270	270
Year 4	2007	270	270
Year 5	2008	250	250
2015 Compliance Year - Water into Distribution System			
2015	190		190

SB X7-7 RA3 Table 5: Gallons Per Capita Per Day (GPCD) for Regional Alliance*

Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Annual Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1995	379,690	112,440	264
Year 2	1996	383,790	119,120	277
Year 3	1997	390,970	123,740	283
Year 4	1998	399,770	113,260	253
Year 5	1999	407,990	118,740	260
Year 6	2000	413,960	120,820	261
Year 7	2001	419,650	123,030	262
Year 8	2002	426,450	125,040	262
Year 9	2003	430,110	119,700	248
Year 10	2004	432,690	125,700	259
Year 11	2005			
Year 12	2006			
Year 13	2007			
Year 14	2008			
Year 15	2009			
10-15 Year Average Baseline GPCD				263
5 Year Baseline GPCD				
Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use
Year 1	2004	432,690	125,700	259
Year 2	2005	432,060	119,940	248
Year 3	2006	428,840	119,010	248
Year 4	2007	430,550	123,690	256
Year 5	2008	434,550	122,330	251
5 Year Average Baseline GPCD				253
2015 Compliance Year GPCD				
2015		466,410	89,470	171
<i>*If the Regional Alliance does not calculate regional population or regional gross water directly, each participating agency must submit population and gross water tables, SB X7-7 Tables 0 through 6, as applicable, to show each agency's calculations. These individual agency tables will be submitted with the individual or Regional Urban Water Management Plan.</i>				
NOTES:				

SB X7-7 RA3 Table 6: Gallons per Capita per Day
for Regional Alliance *Summary*
From Table SB X7-7 Table 5

10-15 Year Baseline GPCD	263
5 Year Baseline GPCD	253
2015 Compliance Year GPCD	171
NOTES:	

SB X7-7 RA3 Table 7: 2020 Target Method for Regional Alliance

Select Only One

Target Method		Supporting Documentation
☒	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D
☐	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator

NOTES:

SB X7-7 RA3 Table 7-A: Target Method 1 for Regional Alliance 20% Reduction	
10-15 Year Baseline GPCD	2020 Target GPCD
263	210
NOTES:	

SB X7-7 RA3 Table 7-F: Confirm Minimum Reduction for 2020 Target for Regional Alliance

5 Year Baseline GPCD <i>From SB X7-7 Table 5</i>	Maximum 2020 Target*	Calculated 2020 Target <i>As selected in SB X7-7 Table 7</i>	Confirmed 2020 Target
253	240	210	210

* Maximum 2020 Target is 95% of the 5 Year Baseline GPCD

NOTES:

**SB X7-7 RA3 Table 8: 2015 Interim Target GPCD
for Regional Alliance**

Confirmed 2020 Target <i>Fm SB X7-7 Table 7-F</i>	10-15 year Baseline GPCD <i>Fm SB X7-7 Table 5</i>	2015 Interim Target GPCD
210	263	236
NOTES:		

SB X7-7 RA3 Table 9: 2015 Compliance for Regional Alliance

Actual 2015 GPCD	2015 Interim Target GPCD	OPTIONAL Economic Adjustment*	TOTAL Adjustments	Adjusted 2015 GPCD	2015 GPCD (Adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015?
171	236	From Methodology 8 (Optional)	0	171	171	YES

**Adjustments for extraordinary economic growth can be applied either to the individual suppliers' data or to the aggregate regional alliance data (but not both) depending upon availability of suitable data and methods. (Weather normalization, extraordinary events and changes in distribution area should be made for each individual water supplier, if applicable.)*

NOTES:

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Appendix C
Copy of 60-Day Notification Letters and Supplier Information
Exchange Letter

Mailing List for UWMP Notifications

(Updated 2/16/2016)

Municipal Customers

Mr. Mike Yeraka, General Manager
Diablo Water District
P.O. Box 127
Oakley, CA 94561
mikegm1@aol.com

Mr. Tim Coley
Water Treatment Supervisor
City of Antioch
P.O. Box 5007
Antioch, CA 94509
tcoley@ci.antioch.ca.us

Mr. Walter Pease
Director of Water Utilities
City of Pittsburg
65 Civic Drive
Pittsburg, CA 94565
wpease@ci.pittsburg.ca.us

Mr. Mark Insko
Senior Civil Engineer
Golden State Water Company
3005 Gold Canal Drive
Rancho Cordova, CA 95670
markinsco@gswater.com

Mr. Tim Tucker
City Engineer
City of Martinez
525 Henrietta Street
Martinez, CA 94553
ttucker@cityofmartinez.org

Wastewater Agencies

Mr. Jean-Marc Petit, Director
Engineering & Technical Services
Central Contra Costa Sanitary District
5019 Imhoff Place
Martinez, CA 94553-4392
jmpetit@centralsan.org

Mr. Phil Govea, Director
Engineering Services
Delta Diablo Sanitation District
2500 Pittsburg-Antioch Highway
Antioch, CA 94509-13732
philg@deltadiablo.org

Mr. Neal Allen, District Manager
Mt. View Sanitary District
P.O. Box 2757
Martinez CA, 94553
nallen@mvsd.org

Mr. Chad Davisson, General Manager
Ironhouse Sanitary District
450 Walnut Meadows Drive
Oakley, CA 94561
davisson@isd.us.com

Cities and Communities

Mr. John Kopchik, Director
Department of Conservation and Development
Contra Costa County
30 Muir Road
Martinez, CA 94553
John.kopchik@dcd.cccounty.us

Ms. Laura Simpson
Planning Manager
City of Concord
1950 Parkside Drive
Concord, CA 94519
Laura.Simpson@cityofconcord.org

Ms. Mindy Gentry, Director
Community Development Department
City of Clayton
6000 Heritage Trail
Clayton, CA 94517
mgentry@ci.clayton.ca.us

Mr. Josh McMurray, Planning Manager
City of Oakley – City Hall
3231 Main Street
Oakley, CA 94561
jmcmurray@ci.oakley.ca

Ms. Sandra Meyer, AICP, Director
Community Development Department
City of Walnut Creek
1666 North Main Street
Walnut Creek, CA 94596
meyer@ci.walnut-creek.ca.us

Mr. Greg Fuz, Manager
Community Development Department
City of Pleasant Hill
100 Gregory Lane
Pleasant Hill, CA 94523
gful@pleasanthillca.org

Mr. Tim Tucker, Manager
Engineering Division
City of Martinez
525 Henrietta Street
Martinez, CA 94553
ttucker@cityofmartinez.org

Mr. Eric Brennan
Water Operations Manager
City of Brentwood
2201 Elkins Way
Brentwood, CA 94513-7344
Chris Ehlers: cehlers@brentwoodca.gov
Eric Brennan: ebrennan@brentwoodca.gov
Diana Williford: dwilliford@brentwoodca.gov



October 13, 2015

Mr. Tim Tucker, Manager
Engineering Division
City of Martinez
525 Henrietta Street
Martinez, CA 94553

Subject: 2015 Urban Water Management Plan Update

Dear Mr. Tucker:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The Contra Costa Water District (District) is currently preparing an update to its Urban Water Management Plan (UWMP), which was last adopted in June 2011. A copy of the 2010 UWMP is available at the District's website (<http://www.ccwater.com/DocumentCenter/Home/View/549>). The UWMP documents the District's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with California Water Code Division 6, Part 2.6, Section 10621, the District is notifying any city or county within which the District provides water supplies that the UWMP is being reviewed and updated. A copy of the draft plan will be provided to all wholesale municipal customers of the District and city and county planning departments in April 2016. The final plan will be submitted to the California Department of Water Resources by July 1, 2016.

Please contact me at (925) 688-8127 if you have any questions about the District's Urban Water Management Plan update.

Sincerely,

A handwritten signature in dark ink, appearing to read "Kim", is written over a horizontal line.

Kimberly Lin
Senior Engineer

KL/rlr

file
Board of Directors
Joseph L. Campbell
President

Lisa M. Borba
Vice President

Bette Boatman

John A. Burgh

Connstance Holdaway

General Manager
Jerry Brown



October 13, 2015

file
Board of Directors
Joseph L. Campbell
President
Lisa M. Borba
Vice President
Bette Boatman
John A. Burgh
Connstance Holdaway

General Manager
Jerry Brown

Mr. Chad Davisson
General Manager
Ironhouse Sanitary District
450 Walnut Meadows Drive
Oakley, CA 94561

Subject: 2015 Urban Water Management Plan Update

Dear Mr. Davisson:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The Contra Costa Water District (District) is currently preparing an update to its Urban Water Management Plan (UWMP), which was last adopted in June 2011. A copy of the 2010 UWMP is available on the District's website (<http://www.ccwater.com/DocumentCenter/Home/View/549>). The UWMP documents the District's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

The UWMP will include a description of the wastewater collection and treatment systems in the District's service area, recycled water currently being used, quantification of the potential uses of recycled water, and the projected use of recycled water in the District's service area.

A draft of the District's UWMP will be provided to you for review in April 2016. The final UWMP will be submitted to the California Department of Water Resources by July 1, 2016.

Please contact me at (925) 688-8127 if you have any questions about the District's Urban Water Management Plan update.

Sincerely,

A handwritten signature in dark ink, appearing to read "Kimberly Lin", is written over a horizontal line.

Kimberly Lin
Senior Engineer

KL/rlr



October 12, 2015

full
Board of Directors
Joseph L. Campbell
President

Lisa M. Borba
Vice President

Bette Boatman

John A. Burgh

Connstance Holdaway

General Manager
Jerry Brown

Mr. Chris Kania, Water Superintendent
City of Martinez
525 Henrietta Street
Martinez, CA 94553

Subject: 2015 Urban Water Management Plan Update

Dear Mr. Kania:

The California Urban Water Management Planning Act (California Water Code Division 6, Part 2.6, Sections 10610 through 10656) requires that each urban water supplier, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, shall prepare, update and adopt its urban water management plan (UWMP) at least once every five years. The next UWMP is due to the Department of Water Resources by July 1, 2016.

As part of the 2015 UWMP update, Contra Costa Water District (CCWD) will be preparing an updated analysis of the baseline daily per capita water use and 2020 water use target in accordance with Senate Bill x7-7 (SBx7-7). CCWD will also update and report on our compliance with the interim 2015 water use target. Consistent with the 2010 UWMP, CCWD will fulfill its SBx7-7 reporting requirements for our retail treated water service area as well as our wholesale service area via a regional alliance with our municipal customers.

CCWD would like to meet with our municipal customers to discuss upcoming work on the UWMP, ongoing water use efficiency measures, the regional alliance approach to complying with the requirements of SBx7-7, and coordinate on future exchange of information. CCWD will contact you regarding an initial meeting in November. If you prefer we contact someone else in your organization regarding the 2015 UWMP update, please let me know.

CCWD looks forward to working with you on the UWMP update. Please contact me at (925) 688-8127 or Cristina Estrella at (925) 688-8106 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Kimberly Lin".

Kimberly Lin
Senior Engineer

KL/CE/tlr



Board of Directors
Joseph L. Campbell
President

Lisa M. Borba
Vice President

Bette Boatmun

John A. Burgh

Connstance Holdaway

General Manager
Jerry Brown

February 16, 2016

Mr. Eric Brennan
Water Operations Manager
City of Brentwood
2201 Elkins Way
Brentwood, CA 94513-7344

Subject: 2015 Urban Water Management Plan Update

Dear Mr. Brennan:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every five years. The Contra Costa Water District (District) is currently preparing an update to its Urban Water Management Plan (UWMP), which was last adopted in June 2011. A copy of the 2010 UWMP is available at the District's website (<http://www.ccwater.com/DocumentCenter/Home/View/549>). The UWMP documents the District's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with California Water Code Division 6, Part 2.6, Section 10621, the District is notifying any city or county within which the District provides water supplies that the UWMP is being reviewed and updated. A copy of the draft plan will be provided to all wholesale municipal customers of the District and city and county planning departments in April 2016. The final plan will be submitted to the California Department of Water Resources by July 1, 2016.

Please contact me at (925) 688-8127 if you have any questions about the District's Urban Water Management Plan update.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kimberly Lin".

Kimberly Lin, P.E.
Senior Engineer

KL/prs

**Board of Directors**Joseph L. Campbell
*President*Lisa M. Borba
Vice President

Bette Boatman

John A. Burgh

Connstance Holdaway

General Manager

Jerry Brown

February 16, 2016

Mr. Tim Coley
Water Treatment Supervisor
City of Antioch
P.O. Box 5007
Antioch, CA 94509

**Subject: 2015 Urban Water Management Plan, Supply Reliability Analysis and
Senate Bill x7-7 Requirements**

Dear Mr. Coley:

The Contra Costa Water District (District) is currently preparing an update to its Urban Water Management Plan (UWMP). In conformance with California Water Code Division 5, Part 2.6, Section 10635, the District has prepared an assessment of its water supply reliability. This analysis is being provided to all wholesale municipal customers of the District for use in the preparation of their UWMPs.

Table 1 provides water supply reliability information as a percentage of demand. For example, in the year 2040, the District anticipates it could supply at least 85 percent of its municipal customers' demands in the third year of a multiple year drought. The water supply reliability goal approved by the District's Board of Directors is to meet 100 percent of demand in normal years and at least 85 percent of demand during drought conditions. The remaining 15 percent would be met by a combination of short-term water purchases and a short-term conservation program.

Table 1 Water Supply Reliability Information (% of Demand)

Year Type	2020	2025	2030	2035	2040
Normal Year	100%	100%	100%	100%	100%
Single-Dry Year	100%	100%	100%	100%	100%
Multi-Year Drought, Year 1	100%	100%	100%	100%	100%
Multi-Year Drought, Year 2	100%	100%	100%	98%	94%
Multi-Year Drought, Year 3	90%	90%	90%	88%	85%

Table 2 provides the minimum water supply available in the next three years, assuming continuing drought conditions. As shown, the District anticipates it could supply up to 75 percent of its municipal customers' demands in the next three years if drought conditions continue and current statewide conservation measures remain in effect. This level represents a scenario in which water supplies are available to meet minimum public health and safety goals.

Table 2 Minimum Supply Next Three Years (% of Demand)

	2016	2017	2018
Water supply assuming continuing drought conditions	75%	75%	75%

Additionally, the District and its wholesale municipal customers are required to comply with Senate Bill x7-7 (SBx7-7), which requires water suppliers to report their 2015 water use target/compliance and 2020 water use target in their 2015 UWMPs. Water suppliers can comply with SBx7-7 individually and/or through a regional alliance. As discussed during our meeting in November 2015, the District will prepare a SBx7-7 analysis for its regional alliance, which consists of the District and its wholesale municipal customers (Cities of Martinez, Antioch, and Pittsburg, Diablo Water District, and Golden State Water Company). Each agency is required to report its individual water use target, and include a statement in its UWMP that the agency is a member of the District's regional alliance. This allows the agency to comply with SBx7-7 on an individual or regional basis. The District will submit a letter to the Department of Water Resources with the list of members in its regional alliance.

We will follow up this letter with a phone call to you to discuss any questions or concerns you may have about the information provided in this letter. If you have any questions prior to hearing from our office, please feel free to contact me at (925) 688-8127.

Sincerely,



Kimberly Lin, P.E.
Senior Engineer

Appendix D

CUWCC Reports



CUWCC BMP Retail Coverage Report 2013

Foundational Best Management Practices for Urban Water Efficiency

BMP 1.1 Operation Practices

ON TRACK

1003 Contra Costa WD - Retail

1. Conservation Coordinator provided with necessary resources to implement BMPs?

Name:

Chris Dundon

Title:

Water Conservation Supervisor

Email:

cdundon@ccwater.com

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.		http://www.cewater.com/files/COR5.pdf	Section 5.44 of the Contra Costa Water District Code of Regulations lists water waste prohibitions and encouraged water use practices. Urban water Management Plan, Section 4: Water Shortage Contingency Plan
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



CUWCC BMP Retail Coverage Report 2013
Foundational Best Management Practices for Urban Water Efficiency

BMP 1.1 Operation Practices

ON TRACK

Exemption

No

Comments:

--



CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.2 Water Loss Control

ON TRACK

1003 Contra Costa WD - Retail

Completed Standard Water Audit Using AWWA Software? Yes

AWWA File provided to CUWCC? Yes

AWWA WaterAudit Software_CCWD_FY13 Retail.xls

AWWA Water Audit Validity Score? 81

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 Repair 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)
129	572,923	951,073	10			0

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

1003 Contra Costa WD - Retail

Numbered Unmetered Accounts	No
Metered Accounts billed by volume of use	Yes
Number of CII Accounts with Mixed Use Meters	1097
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: 5/31/2011	
Uploaded file name:	
Completed a written plan, policy or program to test, repair and replace meters	Yes
At Least As effective As	No
Exemption	No
Comments:	



CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.4 Retail Conservation Pricing

On Track

1003 Contra Costa WD - Retail

Implementation (Water Rate Structure)

Customer Class	Water Rate Type	Conserving Rate?	(V) Total Revenue Commodity Charges	(M) Total Revenue Fixed Carges
Single-Family	Increasing Block	Yes	26921579	11558808
Multi-Family	Increasing Block	Yes	7562994	3066496
Commercial	Uniform	Yes	5214201	1992757
Industrial	Uniform	Yes	122795	17704
Institutional	Uniform	Yes	1362108	514818
Dedicated Irrigation	Increasing Block	Yes	5192873	1164563
Industrial	Uniform	Yes	16073805	82430
Dedicated Irrigation	Uniform	Yes	818038	135539
			63268393	18533115

Calculate: $V / (V + M)$

77 %

Implementation Option: Use Annual Revenue As Reported

☐ Use 3 years average instead of most recent year

Canadian Water and Wastewater Association

Upload file:

Agency Provide Sewer Service: No

At Least As effective As

No

Exemption

No

Comments:

**BMP 2.1 Public Outreach****2013**

ON TRACK

Reporting unit name

Reporting unit # 1003

Contra Costa WD - Retail

/ 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

Please provide the name of Agency if not CUWCC Group1 members

Public Information Programs List

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

Number of Public Contacts	Public Information Programs Name
680000	Newsletter articles on conservation
392500	Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information
21	Landscape water conservation media campaigns
60000	Email Messages

Contact with the Media

Yes

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

Please provide the name of Agency if not CUWCC Group1 members

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

Yes

Number of Media Contacts	Public Outreach Media Contact Name List
8	Articles or stories resulting from outreach
2	News releases
2	Television contacts

Wholesale Agency Website Updates

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

No

Please provide the name of Agency if not CUWCC Group1 members



BMP 2.1 Public Outreach

2013

Agency Website Updates

Enter your agency's URL (website address):

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

WaterSaver Newsletter
Garden Design Assistance Coupon
Lawn To Garden Workshop
Washer Rebate Program Revision

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

Public Information Programs Annual Budget

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

Annual Budget Category	Annual Budget Amount	Personal Cost Included?	Comments
Public Outreach	195000		

Public Information Expenses

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question related to your budget (Section 2.1.7, above). For example, if you included personnel costs in the budget entered above, be sure to include them here as well.

Public Outreach Expense Category	Expense Amount	Personal Cost Included?
Public Outreach	150000	

Additional Public Information Program

Please report additional public information contacts. List these additional contacts in order of how your agency views their importance / effectiveness with respect to conserving water, with the most important / effective listed first (where 1 = most important).

Were there additional Public Outreach efforts?

Public Outreach Additional Information

Social Marketing Programs

Branding Does your agency have a water conservation "brand," "theme" or mascot?

Describe the brand, theme or mascot.

Market Research Have you sponsored or participated in market research to refine your message?

Market Research Topic

Brand Message

Brand Mission Statement

Community Committees

Do you have a community conservation committee?

Enter the names of the community committees:

Training



CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.2 School Education Programs

ON TRACK

1003 Contra Costa WD - Retail

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

Materials meet state education framework requirements? Yes

Materials are reviewed annually to ensure they meet state standards

Materials distributed to K-6? Yes

Water Conservation booklets and canal safety newsletters, water cycle, water role in CA history, forces that move water, how water is treated, source water education, watersheds, CA water geography

Materials distributed to 7-12 students? Yes (Info Only)

grade appropriate information on water conservation, water cycle, canal safety, water quality

Annual budget for school education program:

106862.00

Description of all other water supplier education programs

The school education program includes: classroom instruction, water treatment plant tours, watershed fieldtrips, student assembly programs, and canal safety

Comments:

Budget is 50% of total. Other 50% is in wholesale report

At Least As effective As

No

Exemption

No

0



CUWCC BMP Coverage Report 2013

BMP3 - Residential

ON TRACK

Unique Conservation Measures

Residential Assistance / Landscape Water Survey unique water savings

Measured water savings (AF/YR) 18

Uploaded file name: Copy4_of_Whitcomb_Report_2000.pdf

High Efficiency Clothes Washers unique water savings

Measured water savings (AF/YR) 0

Uploaded file name:

WaterSense Specification toilets unique water savings

SF Measured water savings (AF/YR) MF Measured water savings (AF/YR)

Uploaded file name:

WaterSense Specification toilets for New Residential development unique water savings

Measured water savings (AF/YR) 0

Uploaded file name:

High bill contact with single-family and multi-family customers

Measured water savings (AF/YR)

Uploaded file name:

Educate residential customers about the behavioral aspects of water conservation

Measured water savings (AF/YR) 0

Uploaded file name:

Notify residential customers of leaks on the customer's side of the meters

Measured water savings (AF/YR) 0

Uploaded file name:

Provide bill or surcharge refunds for customers to repair leaks on the customer's side of the meters

Measured water savings (AF/YR) 0

Uploaded file name:

Provide unique water savings fixtures that are not included in the BMP list above

Measured water savings (AF/YR) 0

Uploaded file name:

Install residence water use monitors

Measured water savings (AF/YR) 0

Uploaded file name:

Participate in programs that provide residences with school water conservation kits

Measured water savings (AF/YR) 0

Uploaded file name:

Implement in automatic meter reading program for residential customers



CUWCC BMP Coverage Report 2013

BMP3 - Residential

ON TRACK

Measured water savings (AF/YR) 0

Uploaded file name:

OTHER Types of Measures

Measured water savings (AF/YR) 0

Uploaded file name:

Traditional Water Savings Calculation result:

Measures	Target Water Savings (AF):	Actual Water Savings (AF):
SF Leak Detection Surveys	8.93	0.00
MF Leak Detection Surveys	2.56	1.14
Landscape Water Surveys	8.93	0.00
SF WSS Toilets Installed	95.52	26.80
MF WSS Toilets Installed	63.54	18.36
HECW	29.78	85.63

Comments:

At Least As Effective As No

Exemption No



CUWCC BMP Coverage Report 2013

BMP3 - Residential

ON TRACK

Agency **Contra Costa WD - Retail**

Date Agency Signed MOU: 9/11/1991

Coverage Option: Flextrack

Total Measured Water Savings (AF/Year)

TRADITIONAL	FLEXTRACK	ACTUAL	TARGET	Prior Activities Credit
131.93	18	149.93	209.26	258.070

Residential Assistance

	Single Family Accounts	Single Family Target	Multi Family Units	Multi Family Target
Total Number Of Accounts/Units	53177		30514	
Total Participants during Reporting	0		102	
Number of Leak Detection Surveys or Assistance on Customer Property	0	398.83	102	228.86
Number of Faucet Aerators Distributed	307		194	
Number of WSS Showerheads Distributed	241		204	
Landscape Water Surveys	0	398.83	102	

Has agency reached a 75% market saturation for showerheads?

Yes

High Efficiency Clothes Washers

Single Family Accounts

Single Family Target

Number of installations for HECW

1529

425.42

Are financial incentives provided for HECWs?

Yes

Has agency completed a HECW Market Penetration Study?

No

Water Sense Specification Toilets

Retrofit 'On Resale' Ordinance exists No

75% Market Penetration Achieved No

Single Family Units

Multi Family Units

Five year average Resale Rate

0.03

0.03

Number Toilets per Household

2.08

1.38

Number WSS Toilets Installed

931

365

Target Number of WSS Toilets

1659.12

631.64

WSS for New Residential Development

Does an Ordinance Exists Requiring WSS Fixtures and Appliances in new SF and MF residences?

Single Family Units

Multi Family Units

Yes

Yes

Number of new SF & MF units built

0

0

Incentives



CUWCC BMP Coverage Report 2013

BMP4 - Commercial Industrial
Institutional

ON TRACK

Agency **Contra Costa WD - Retail**

Date Agency Signed MOU: 9/11/1991

Coverage Option: Flextrack

CII Baseline Water Use (AF): 5401.00

CII Water Use Reduction(AF): 540.1

Total Measured Water Savings (AF/Year)

TRADITIONAL	FLEXTRACK	ACTUAL	TARGET	Prior Activities Credit
2.6	234	236.6	232.24	250.230

<u>Water Efficiency Measures:</u>	<u>Quantity Installed:</u>	<u>Water Savings:</u>	<u>Accept Council's default value</u>
1 High Efficiency Toilets (1.2 GPF or less)	46	1.33	Yes
2 High Efficiency Urinals (0.5 GPF or less)	0		No
3 Ultra Low Flow Urinals	0.00		No
4 Zero Consumption Urinals	0.00		No
5 Commercial High Efficiency Single Load Clothes Washers	8.00	0.42	Yes
6 Cooling Tower Conductivity Controllers	0.00		No
7 Cooling Tower pH Controllers	0.00		No
8 Connectionless Food Steamers	0.00		No
9 Medical Equipment Steam Sterilizers	0.00		No
10 Water Efficient Ice Machines	0.00		No
11 Pressurized Water Brooms	0.00		No
12 Dry Vacuum Pumps	2.00	0.83	Yes

Total Water Savings: 2.58

Unique Conservation Measures

Industrial Process Water Use Reduction

Measured water savings (AF/YR) 234

Uploaded file name:

Commercial Laundry Retrofits

Measured water savings (AF/YR)

Uploaded file name:

Industrial Laundry Retrofits

Measured water savings (AF/YR)

Uploaded file name:

Filter Upgrades (for pools, spas and fountains)



CUWCC BMP Coverage Report 2013

BMP5 - Landscape

ON TRACK

Agency **Contra Costa WD - Retail**

Date Agency Signed MOU: 9/11/1991

Coverage Option: Flextrack

Total Measured Water Savings (AF/Year)

TRADITIONAL	FLEXTRACK	ACTUAL	TARGET	PRIOR ACTIVITIES CREDIT
299.24	835.11	1134.35	210.6	2025.15

1) Accounts with Dedicated Irrigation Meters

a) Number of dedicated irrigation meter accounts	1314
b) Number of dedicated irrigation meter accounts with water budgets	840
c) Aggregate water use for all dedicated non-recreational landscape accounts with water budgets	2652
d) Aggregate acreage assigned water budgets for dedicated non-recreational landscape accounts with budgets	
Aggregate acreage of recreational areas assigned water budgets for dedicated recreational landscape accounts with budgets	1275
Preserved water use records and budgets for customers with dedicated landscape irrigation accounts for at least four years	Yes
Unique measured water Savings (AF/YR) in this measure	833
Uploaded the backup data if there are unique measured water savings?	Yes
Technical Assistance	
Number of Accounts 20% over-budget	371
Number of Accounts 20% over-budget offered technical assistance	371
Number of Accounts 20% over-budget accepting technical assistance	20
Unique measured water Savings (AF/YR) in technical assistance	
Uploaded the backup data if there are unique measured water savings?	No

2) Commercial / Industrial / Institutional Accounts without Meters or with Mixed-Use Meters

Number of mixed use and un-metered accounts.	1390	
Number of irrigation water use surveys offered	1390	
Number of irrigation water use surveys accepted	8	
Type: Incentives numbers received by customers:	\$ Value:	0
Type: Rebates numbers received by customers:	\$ Value:	0
Type No- or low-Interest loan offered numbers received by customers:	\$ Value:	0
Annual water savings by customers receiving irrigation water savings surveys and implementing recommendations		
Estimated annual water savings by customers receiving surveys and implementing recommendations		



CUWCC BMP Coverage Report 2013

BMP5 - Landscape

ON TRACK

Unique measured water Savings (AF/YR) in this measure

Uploaded the backup data if there are unique measured water savings?

No

Financial Incentives

Number Of Incentives	Dollar Value Of Incentives	Incentive Types
6909		Spray to Drip Conversion
303		Rotator NozzleRebate
5		SF Smart Timer Rebate
2		CII Smart Timer Rebate

Unique measured water Savings (AF/YR) inFinancial incentives

2.11

Uploaded the backup data if there are unique measured water savings?

Yes

Unique Conservation Measures

1. Monitor and report on landscape water use

1a. Measure landscapes and develop water budgets for customers with dedicated landscape meters. Provide timely water use reports with comparisons of water use to budget that provide customers the information they need to adjust irrigation schedules.

Uploaded file name:

1b. Measure landscapes and develop water budgets for customers with Mixed Use meters. Provide timely water use reports with comparisons of water use to budget that provide customers the information they need to adjust irrigation schedules.

Uploaded file name:

1c. Establish agency-wide water budget. (Include in Help notes: ETo based water budget in the MWELO changed in 2010 from .8ETo to .7ETo.)

Uploaded file name:

1d. Establish agency-wide, sector-based irrigation goal to reduce water use, based on season.

Uploaded file name:

2. Provide technical landscape resources and training

2a. Upon customer requests, provide landscape irrigation management and landscape design information and resources: provide assistance, answer customer questions, respond to run-off and high-bill calls.

Uploaded file name:

2b. Perform landscape & irrigation audits: including irrigation scheduling, plant information, and landscape area measurement.

Uploaded file name:

2c. Sponsor, co-sponsor, promote, or support landscape workshops, training, presentations and other technical educational events for homeowners and professionals: design, installation, maintenance, water management.

Uploaded file name:

2d. Establish time-of-day irrigation restrictions.



CUWCC BMP Coverage Report 2013

BMP5 - Landscape

ON TRACK

Uploaded file name:

2e . Establish day-of-week irrigation restrictions.

Uploaded file name:

3. Provide incentives

3a. Establish landscape budget-based rates.

Uploaded file name:

3b. Provide incentives for conversions from mixed-use meters to dedicated landscape meters.

Uploaded file name:

3c. Provide incentives for irrigation equipment upgrades that improve distribution uniformity, irrigation efficiency, or scheduling capabilities.

Uploaded file name:

3d. Provide incentives for the reduction of water use over an irrigated area, or reduction in the size of the irrigated area due to replacement of turf or other high water-using plants with low water-using plants, artificial turf, or permeable surfaces.

Uploaded file name:

3e. Provide incentives for conversions from potable to recycled water.

7

Uploaded file name:

3f. Provide incentives for the use of alternative sources of water in the landscape (i.e. gray water, rainwater, cisterns, etc.)

Uploaded file name:

4. Participate in local and regional planning and regulatory activities

4a. Collaborate with planning agencies at the local and regional level, other water suppliers in the area and stakeholders in response to state or federal requirements such as the State Model Water Efficient Landscape Ordinance and AB 1881. Participate in the development, review, implementation, and enforcement of requirements for new developments. Provide water use data to planning agencies.

4b. Establish or participate in a water conservation advisory committee or other community outreach effort to drive market transformation and exchange information about landscape water conservation with developers, community-based organizations, homeowners associations, residential customers, landscape professionals, educators, other water suppliers in region.

4c. Participate in regional efforts: integrated water resource management, watershed management, NPDES permit agencies, etc.

5. Develop a holistic approach to landscape water use efficiency

5a. Develop and implement a comprehensive landscape water conservation program for all customers. Target marketing efforts to those most likely to result in benefits to both customer and Agency.

Uploaded file name:

6. Other Measures

Other Landscape Measures.



Flex Track Summary Report

Foundational Best Management Practices For Urban Water Efficiency

1003 Contra Costa WD - Retail

BMP	ACTUAL	TARGET	PRIOR CREDIT	Coverage option	STATUS
BMP 3	149.93	209.26	258.070	Flextrack	ON TRACK
BMP 4	236.6	232.24	250.230	Flextrack	ON TRACK
BMP 5	1134.35	210.6	2025.15	Flextrack	ON TRACK
TOTAL	597.13	652.1	2533.45		On Track



CUWCC BMP Retail Coverage Report 2014

Foundational Best Management Practices for Urban Water Efficiency

BMP 1.1 Operation Practices

ON TRACK

1003 Contra Costa WD - Retail

1. Conservation Coordinator provided with necessary resources to implement BMPs?

Name:

Chris Dundon

Title:

Water Conservation Supervisor

Email:

cdundon@ccwater.com

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.		http://www.cwater.com/files/COR5.pdf	Section 5.44 of the Contra Costa Water District Code of Regulations lists water waste prohibitions and encouraged water use practices. Urban water Management Plan, Section 4: Water Shortage Contingency Plan
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



CUWCC BMP Retail Coverage Report 2014
Foundational Best Management Practices for Urban Water Efficiency

BMP 1.1 Operation Practices

ON TRACK

Exemption

No

Comments:

--



CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.2 Water Loss Control

ON TRACK

1003 Contra Costa WD - Retail

Completed Standard Water Audit Using AWWA Software? Yes

AWWA File provided to CUWCC? Yes

AWWA WaterAudit Software_CCWD_FY14 Retail.xls

AWWA Water Audit Validity Score? 80

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 Repair 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)
150	443,270	914,457	10			

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

1003 Contra Costa WD - Retail

Numbered Unmetered Accounts	No
Metered Accounts billed by volume of use	Yes
Number of CII Accounts with Mixed Use Meters	1097
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: 5/31/2011	
Uploaded file name:	
Completed a written plan, policy or program to test, repair and replace meters	Yes
At Least As effective As	No
Exemption	No
Comments:	



CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.4 Retail Conservation Pricing

On Track

1003 Contra Costa WD - Retail

Implementation (Water Rate Structure)

Customer Class	Water Rate Type	Conserving Rate?	(V) Total Revenue Commodity Charges	(M) Total Revenue Fixed Carges
Single-Family	Increasing Block	Yes	28000089	11700433
Multi-Family	Increasing Block	Yes	7751850	3162503
Commercial	Uniform	Yes	5531916	2016596
Industrial	Uniform	Yes	134538	17785
Institutional	Uniform	Yes	1410316	509512
Dedicated Irrigation	Increasing Block	Yes	5364744	1187398
Industrial	Uniform	Yes	17740558	0
Dedicated Irrigation	Uniform	Yes	745746	137241
Other	Uniform	Yes	121865	95307
Other	Uniform	Yes	99225	185328
			66900847	19012103

Calculate: $V / (V + M)$

78 %

Implementation Option: Use Annual Revenue As Reported

☐ Use 3 years average instead of most recent year

Canadian Water and Wastewater Association

Upload file:

Agency Provide Sewer Service: No

At Least As effective As

No

Exemption

No

Comments:

**BMP 2.1 Public Outreach****2014**

Reporting unit name

Reporting unit #

1003

Contra Costa WD - Retail

/ 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

Please provide the name of Agency if not CUWCC Group1 members

Public Information Programs List

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

Yes

Number of Public Contacts	Public Information Programs Name
697000	Newsletter articles on conservation
390480	Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information
7825	General water conservation information
235000	Landscape water conservation media campaigns
62400	Email Messages

Contact with the Media

Yes

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

Please provide the name of Agency if not CUWCC Group1 members

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

Yes

Number of Media Contacts	Public Outreach Media Contact Name List
10	Articles or stories resulting from outreach
5	News releases
5	Radio contacts
14	Television contacts



BMP 2.1 Public Outreach

2014

Wholesale Agency Website Updates

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

No

Please provide the name of Agency if not CUWCC Group1 members

Agency Website Updates

Enter your agency's URL (website address):

www.ccwater.com

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

Lawn to Garden Website Revision
Garden Design Assistance Program
Coupon Programs Updates
Drought Program Updates

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

Yes

Public Information Programs Annual Budget

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

Annual Budget Category	Annual Budget Amount	Personal Cost Included?	Comments
Public Information	110000		

Public Information Expenses

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question related to your budget (Section 2.1.7, above). For example, if you included personnel costs in the budget entered above, be sure to include them here as well.

Public Outreach Expense Category	Expense Amount	Personal Cost Included?
Public Information	110000	

Additional Public Information Program

Please report additional public information contacts. List these additional contacts in order of how your agency views their importance / effectiveness with respect to conserving water, with the most important / effective listed first (where 1 = most important).

Were there additional Public Outreach efforts?

No

Public Outreach Additional Information

Social Marketing Programs

Branding

Does your agency have a water conservation "brand," "theme" or mascot?

No

Describe the brand, theme or mascot.

Market Research

Have you sponsored or participated in market research to refine your message?

No

Market Research Topic

Brand Message

Brand Mission Statement



CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.2 School Education Programs

ON TRACK

1003 Contra Costa WD - Retail

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

Materials meet state education framework requirements? Yes

Materials are reviewed annually to ensure they meet state standards

Materials distributed to K-6? Yes

Water Conservation booklets and canal safety newsletters, water cycle, water role in CA history, forces that move water, how water is treated, source water education, watersheds, CA water geography

Materials distributed to 7-12 students? Yes (Info Only)

grade appropriate information on water conservation, water cycle, canal safety, water quality

Annual budget for school education program: 106860.00

Description of all other water supplier education programs

The school education program includes: classroom instruction, water treatment plant tours, watershed fieldtrips, student assembly programs, and canal safety

Comments:

At Least As effective As

No

Exemption

No

0



CUWCC BMP Coverage Report 2014

BMP3 - Residential

ON TRACK

Agency **Contra Costa WD - Retail**

Date Agency Signed MOU: 9/11/1991

Coverage Option: Flextrack

Total Measured Water Savings (AF/Year)

TRADITIONAL	FLEXTRACK	ACTUAL	TARGET	Prior Activities Credit
214	21	235	194.95	204.890

Residential Assistance

	Single Family Accounts	Single Family Target	Multi Family Units	Multi Family Target
Total Number Of Accounts/Units	53230		30716	
Total Participants during Reporting	0		184	
Number of Leak Detection Surveys or Assistance on Customer Property	0	399.23	184	230.37
Number of Faucet Aerators Distributed	461		394	
Number of WSS Showerheads Distributed	511		601	
Landscape Water Surveys	0	399.22	0	

Has agency reached a 75% market saturation for showerheads?

Yes

High Efficiency Clothes Washers

Single Family Accounts

Single Family Target

Number of installations for HECW

1432

425.84

Are financial incentives provided for HECWs?

Yes

Has agency completed a HECW Market Penetration Study?

No

Water Sense Specification Toilets

Retrofit 'On Resale' Ordinance exists No

75% Market Penetration Achieved No

Single Family Units

Multi Family Units

Five year average Resale Rate

0.03

0.03

Number Toilets per Household

2.08

1.38

Number WSS Toilets Installed

1630

716

Target Number of WSS Toilets

1660.78

635.82

WSS for New Residential Development

Does an Ordinance Exists Requiring WSS Fixtures and Appliances in new SF and MF residences?

Single Family Units

Multi Family Units

Yes

Yes

Number of new SF & MF units built

0

0

Incentives



CUWCC BMP Coverage Report 2014

BMP3 - Residential

ON TRACK

Unique Conservation Measures

Residential Assistance / Landscape Water Survey unique water savings

Measured water savings (AF/YR) 21

Uploaded file name: BMP 3 SF Survey Savings Calcs FY14.xls

High Efficiency Clothes Washers unique water savings

Measured water savings (AF/YR) 0

Uploaded file name:

WaterSense Specification toilets unique water savings

SF Measured water savings (AF/YR) MF Measured water savings (AF/YR)

Uploaded file name:

WaterSense Specification toilets for New Residential development unique water savings

Measured water savings (AF/YR) 0

Uploaded file name:

High bill contact with single-family and multi-family customers

Measured water savings (AF/YR)

Uploaded file name:

Educate residential customers about the behavioral aspects of water conservation

Measured water savings (AF/YR) 0

Uploaded file name:

Notify residential customers of leaks on the customer's side of the meters

Measured water savings (AF/YR) 0

Uploaded file name:

Provide bill or surcharge refunds for customers to repair leaks on the customer's side of the meters

Measured water savings (AF/YR) 0

Uploaded file name:

Provide unique water savings fixtures that are not included in the BMP list above

Measured water savings (AF/YR) 0

Uploaded file name:

Install residence water use monitors

Measured water savings (AF/YR) 0

Uploaded file name:

Participate in programs that provide residences with school water conservation kits

Measured water savings (AF/YR) 0

Uploaded file name:

Implement in automatic meter reading program for residential customers



CUWCC BMP Coverage Report 2014

BMP3 - Residential

ON TRACK

Measured water savings (AF/YR) 0

Uploaded file name:

OTHER Types of Measures

Measured water savings (AF/YR) 0

Uploaded file name:

Traditional Water Savings Calculation result:

Measures	Target Water Savings (AF):	Actual Water Savings (AF):
SF Leak Detection Surveys	8.94	0.00
MF Leak Detection Surveys	2.58	2.98
Landscape Water Surveys	8.94	0.00
SF WSS Toilets Installed	95.62	73.73
MF WSS Toilets Installed	63.96	54.37
HECW	14.91	82.92

Comments:

At Least As Effective As No

Exemption No



CUWCC BMP Coverage Report 2014

BMP4 - Commercial Industrial
Institutional

ON TRACK

Agency **Contra Costa WD - Retail**

Date Agency Signed MOU: 9/11/1991

Coverage Option: Flextrack

CII Baseline Water Use (AF): 5401.00

CII Water Use Reduction(AF): 540.1

Total Measured Water Savings (AF/Year)

TRADITIONAL	FLEXTRACK	ACTUAL	TARGET	Prior Activities Credit
5.56	0	5.56	232.24	566.050

<u>Water Efficiency Measures:</u>	<u>Quantity Installed:</u>	<u>Water Savings:</u>	<u>Accept Council's default value</u>
1 High Efficiency Toilets (1.2 GPF or less)	166	4.81	Yes
2 High Efficiency Urinals (0.5 GPF or less)	50	0.75	Yes
3 Ultra Low Flow Urinals	0.00	0.00	Yes
4 Zero Consumption Urinals	0.00	0.00	Yes
5 Commercial High Efficiency Single Load Clothes Washers	0.00	0.00	Yes
6 Cooling Tower Conductivity Controllers	0.00	0.00	Yes
7 Cooling Tower pH Controllers	0.00	0.00	Yes
8 Connectionless Food Steamers	0.00	0.00	Yes
9 Medical Equipment Steam Sterilizers	0.00	0.00	Yes
10 Water Efficient Ice Machines	0.00	0.00	Yes
11 Pressurized Water Brooms	0.00	0.00	Yes
12 Dry Vacuum Pumps	0.00	0.00	Yes

Total Water Savings: 5.56

Unique Conservation Measures

Industrial Process Water Use Reduction

Measured water savings (AF/YR)

Uploaded file name:

Commercial Laundry Retrofits

Measured water savings (AF/YR)

Uploaded file name:

Industrial Laundry Retrofits

Measured water savings (AF/YR)

Uploaded file name:

Filter Upgrades (for pools, spas and fountains)



CUWCC BMP Coverage Report 2014

BMP5 - Landscape

ON TRACK

Agency **Contra Costa WD - Retail**

Date Agency Signed MOU: 9/11/1991

Coverage Option: Flextrack

Total Measured Water Savings (AF/Year)

TRADITIONAL	FLEXTRACK	ACTUAL	TARGET	PRIOR ACTIVITIES CREDIT
0.05	0	0.05	50.04	3133.21

1) Accounts with Dedicated Irrigation Meters

- a) Number of dedicated irrigation meter accounts
- b) Number of dedicated irrigation meter accounts with water budgets
- c) Aggregate water use for all dedicated non-recreational landscape accounts with water budgets
- d) Aggregate acreage assigned water budgets for dedicated non-recreational landscape accounts with budgets

Aggregate acreage of recreational areas assigned water budgets for dedicated recreational landscape accounts with budgets

Preserved water use records and budgets for customers with dedicated landscape irrigation accounts for at least four years Yes

Unique measured water Savings (AF/YR) in this measure

Uploaded the backup data if there are unique measured water savings? No

Technical Assistance

Number of Accounts 20% over-budget 350

Number of Accounts 20% over-budget offered technical assistance 350

Number of Accounts 20% over-budget accepting technical assistance 45

Unique measured water Savings (AF/YR) in technical assistance

Uploaded the backup data if there are unique measured water savings? No

2) Commercial / Industrial / Institutional Accounts without Meters or with Mixed-Use Meters

Number of mixed use and un-metered accounts.

Number of irrigation water use surveys offered

Number of irrigation water use surveys accepted

Type: Incentives numbers received by customers: \$ Value: 0

Type: Rebates numbers received by customers: \$ Value: 0

Type No- or low-Interest loan offered numbers received by customers: \$ Value: 0

Annual water savings by customers receiving irrigation water savings surveys and implementing recommendations

Estimated annual water savings by customers receiving surveys and implementing recommendations



CUWCC BMP Coverage Report 2014

BMP5 - Landscape

ON TRACK

Unique measured water Savings (AF/YR) in this measure

Uploaded the backup data if there are unique measured water savings? No

Financial Incentives

Number Of Incentives	Dollar Value Of Incentives	Incentive Types
46	552	SF Smart Timer(stations)
129	2580	CII Smart Timer
483		Sprinkler Head Replacement
1051		Rotator Nozzles
1		Sub Meter
3036		Spray to Drip Retrofit (sq. ft.)

Unique measured water Savings (AF/YR) in Financial incentives

Uploaded the backup data if there are unique measured water savings? No

Unique Conservation Measures

1. Monitor and report on landscape water use

1a. Measure landscapes and develop water budgets for customers with dedicated landscape meters. Provide timely water use reports with comparisons of water use to budget that provide customers the information they need to adjust irrigation schedules.

Uploaded file name:

1b. Measure landscapes and develop water budgets for customers with Mixed Use meters. Provide timely water use reports with comparisons of water use to budget that provide customers the information they need to adjust irrigation schedules.

Uploaded file name:

1c. Establish agency-wide water budget. (Include in Help notes: ETo based water budget in the MWELO changed in 2010 from .8ETo to .7ETo.)

Uploaded file name:

1d. Establish agency-wide, sector-based irrigation goal to reduce water use, based on season.

Uploaded file name:

2. Provide technical landscape resources and training

2a. Upon customer requests, provide landscape irrigation management and landscape design information and resources: provide assistance, answer customer questions, respond to run-off and high-bill calls.

Uploaded file name:

2b. Perform landscape & irrigation audits: including irrigation scheduling, plant information, and landscape area measurement.

Uploaded file name:

2c. Sponsor, co-sponsor, promote, or support landscape workshops, training, presentations and other technical educational events for homeowners and professionals: design, installation, maintenance, water management.

Uploaded file name:



Flex Track Summary Report

Foundational Best Management Practices For Urban Water Efficiency

1003 Contra Costa WD - Retail

BMP	ACTUAL	TARGET	PRIOR CREDIT	Coverage option	STATUS
BMP 3	235	194.95	204.890	Flextrack	ON TRACK
BMP 4	5.56	232.24	566.050	Flextrack	ON TRACK
BMP 5	0.05	50.04	3133.21	Flextrack	ON TRACK
TOTAL	290.6	477.23	3904.15		On Track



CUWCC BMP Retail Coverage Report 2013

Foundational Best Management Practices for Urban Water Efficiency

BMP 1.1 Operation Practices

ON TRACK

2003 Contra Costa WD - Wholesale

1. Conservation Coordinator
provided with necessary resources
to implement BMPs?

Name:

Chris Dundon

Title:

Water Conservation Supervisor

Email:

cdundon@ccwater.com

2. Water Waste Prevention Documents

At Least As effective As

No

Exemption

No

Comments:



CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.2 Water Loss Control

ON TRACK

2003 Contra Costa WD - Wholesale

Completed Standard Water Audit Using AWWA Software? Yes

AWWA File provided to CUWCC? Yes

AWWA WaterAudit Software_CCWD_FY13 Wholesale.xls

AWWA Water Audit Validity Score? 81

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 Repair 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)
0	670,427	795,812	0		0	0

At Least As effective As

No

Exemption

No

Comments:

Wholesale water system is almost entirely made up of untreated water delivered in open channel, gravity systems. Losses, Leakage, and Component Analysis not applicable when using AWWA software.



CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.3 Metering With Commodity

ON TRACK

2003 Contra Costa WD - Wholesale

Numbered Unmetered Accounts	No
Metered Accounts billed by volume of use	Yes

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

At Least As effective As

No

Exemption

No

Comments:



CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

2003 Contra Costa WD - Wholesale

Wholesale

Does your agency perform Public Outreach programs? Yes

The list of retail agencies your agency assists with public outreach

City of Pittsburg, Golden State Water Company - Bay Point

Cities of Antioch, Martinez, Diablo Water District

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

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

No

Public Outreach Program List	Number
Newsletter articles on conservation	1
Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets	1
Landscape water conservation media campaigns	1
Email Messages	6
Total	9

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

Yes

Number Media Contacts	Number
Articles or stories resulting from outreach	1
News releases	1
Television contacts	1
Newspaper contacts	1
Total	4

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

Yes

Public Information Program Annual Budget

Annual Budget Category	Annual Budget Amount
Public Outreach	195000
Total Amount:	195000

Description of all other Public Outreach programs

Comments:

At Least As effective As

No

Exemption

No

0



CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK



CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.2 School Education Programs

ON TRACK

2003 Contra Costa WD - Wholesale

Wholesale

Does your agency implement School Education programs? No

The list of retail agencies your agency assists with public outreach

Contra Costa WD - Wholesale

Materials meet state education framework requirements? Yes

Materials are reviewed annually to ensure they meet state standards

Materials distributed to K-6? Yes

Water Conservation booklets and canal safety newsletters, water cycle, water role in CA history, forces that move water, how water is treated, source water education, watersheds, CA water geography

Materials distributed to 7-12 students? Yes (Info Only)

grade appropriate information on water conservation, water cycle, canal safety, water quality

Annual budget for school education program: 106862.00

Description of all other water supplier education programs

Comments:

Budget is 50% of total. Other 50% is in retail report

At Least As effective As

No

Exemption

No

0



CUWCC BMP Wholesale Coverage Report 2014

Foundational Best Management Practices for Urban Water Efficiency

BMP 1.1 Wholesale Agency Assistance Programs

ON TRACK

2003 Contra Costa WD - Wholesale

Name: Chris Dundon

Email: cdundon@ccwater.com

a) Financial Investments and Building Partnerships

BMP Section	Monetary Amount for Financial Incentives	Monetary Amount for Equivalent Resources	
BMP 3 Residential	327169	123898	
BMP 4 CII	1920	6312	
BMP 5 Landscape	2703	4833	

b) Technical Support

c) Retail Agency

d) Water Shortage Allocation

Adoption Date: 6/1/2011

File Name: <http://www.cewater.com/files/UWMP.pdf>

e) Non signatory Reporting of BMP implementation by non-signatory Agencies

f) Encourage CUWCC Membership List Efforts to Recruit Retailers

CCWD encourages its members to join the CUWCC.

At Least As effective As

No

Exemption

No

Comments:



CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.2 Water Loss Control

ON TRACK

2003 Contra Costa WD - Wholesale

Completed Standard Water Audit Using AWWA Software? Yes

AWWA File provided to CUWCC? Yes

AWWA WaterAudit Software_CCWD_FY14 Wholesale.xls

AWWA Water Audit Validity Score? 82

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 Repair 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)
0	320,798.3	843,776.9	0		0	0

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

2003 Contra Costa WD - Wholesale

Numbered Unmetered Accounts	No
Metered Accounts billed by volume of use	Yes

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

At Least As effective As

No

Exemption

No

Comments:



CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

2003 Contra Costa WD - Wholesale

Wholesale

Does your agency perform Public Outreach programs? Yes

The list of retail agencies your agency assists with public outreach

City of Pittsburg, Golden State Water Company - Bay Point

Cities of Antioch and Martinez, and Diablo Water District

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

Did at least one contact take place during each quarter of the reporting year? No

Public Outreach Program List	Number
Newsletter articles on conservation	697000
Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets	390480
Landscape water conservation media campaigns	235000
Email Messages	62400
Total	1384880

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

Number Media Contacts	Number
Articles or stories resulting from outreach	10
News releases	5
Radio contacts	5
Television contacts	14
Total	34

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

Public Information Program Annual Budget

Annual Budget Category	Annual Budget Amount
Public Outreach	110000
Total Amount:	110000

Description of all other Public Outreach programs

Comments:

At Least As effective As

No

Exemption

No

0



CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK



CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.2 School Education Programs

ON TRACK

2003 Contra Costa WD - Wholesale

Wholesale

Does your agency implement School Education programs? Yes

The list of retail agencies your agency assists with public outreach

City of Pittsburg, Golden State Water Company - Bay Point

City of Martinez, City of Antioch, Diablo Water District,

Materials meet state education framework requirements? Yes

Materials are reviewed annually to ensure they meet state standards

Materials distributed to K-6? Yes

Water Conservation booklets and canal safety newsletters, water cycle, water role in CA history, forces that move water, how water is treated, source water education, watersheds, CA water geography

Materials distributed to 7-12 students? Yes (Info Only)

grade appropriate information on water conservation, water cycle, canal safety, water quality

Annual budget for school education program: 106860.00

Description of all other water supplier education programs

Comments:

At Least As effective As

No

Exemption

No

0

Appendix E
SB X7-7 Retail Verification Tables

SB X7-7 Table 0: Units of Measure Used in UWMP**(select one from the drop down list)*

Acre Feet

**The unit of measure must be consistent with Table 2-3*

NOTES:

SB X7-7 Table-1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	39,710	Acre Feet
	2008 total volume of delivered recycled water	680	Acre Feet
	2008 recycled water as a percent of total deliveries	1.71%	Percent
	Number of years in baseline period ¹	10	Years
	Year beginning baseline period range	1999	
	Year ending baseline period range ²	2008	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	
	Year ending baseline period range ³	2008	
¹ If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.			
² The ending year must be between December 31, 2004 and December 31, 2010.			
³ The ending year must be between December 31, 2007 and December 31, 2010.			
NOTES: (a) the 2008 total volume of delivered recycled water only includes recycled water use within CCWD's retail TWSA boundary.			

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

DWR recommends pre-review

NOTES:

SB X7-7 Table 3: Service Area Population

Year		Population
10 to 15 Year Baseline Population		
Year 1	1999	190,580
Year 2	2000	192,100
Year 3	2001	192,110
Year 4	2002	194,420
Year 5	2003	194,220
Year 6	2004	194,270
Year 7	2005	193,080
Year 8	2006	190,660
Year 9	2007	189,660
Year 10	2008	190,660
<i>Year 11</i>		
<i>Year 12</i>		
<i>Year 13</i>		
<i>Year 14</i>		
<i>Year 15</i>		
5 Year Baseline Population		
Year 1	2004	194,270
Year 2	2005	193,080
Year 3	2006	190,660
Year 4	2007	189,660
Year 5	2008	190,660
2015 Compliance Year Population		
2015		199,680
NOTES:		

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

Complete one table for each source.

Name of Source		CCWD's Water Treatment Plants		
This water source is:				
☐	The supplier's own water source			
☒	A purchased or imported source			
Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System	Meter Error Adjustment* <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System	
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1999	37,770		37,770
Year 2	2000	38,700		38,700
Year 3	2001	41,340		41,340
Year 4	2002	39,540		39,540
Year 5	2003	39,810		39,810
Year 6	2004	41,620		41,620
Year 7	2005	39,540		39,540
Year 8	2006	39,930		39,930
Year 9	2007	41,070		41,070
Year 10	2008	39,710		39,710
Year 11	0			0
Year 12	0			0
Year 13	0			0
Year 14	0			0
Year 15	0			0
5 Year Baseline - Water into Distribution System				
Year 1	2004	41,620		41,620
Year 2	2005	39,540		39,540
Year 3	2006	39,930		39,930
Year 4	2007	41,070		41,070
Year 5	2008	39,710		39,710
2015 Compliance Year - Water into Distribution System				
2015	25,540			25,540
<i>* Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</i>				
NOTES:				

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)

Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Annual Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1999	190,580	37,770	177
Year 2	2000	192,100	38,700	180
Year 3	2001	192,110	41,340	192
Year 4	2002	194,420	39,540	182
Year 5	2003	194,220	39,810	183
Year 6	2004	194,270	41,620	191
Year 7	2005	193,080	39,540	183
Year 8	2006	190,660	39,930	187
Year 9	2007	189,660	41,070	193
Year 10	2008	190,660	39,710	186
Year 11	0	0	0	
Year 12	0	0	0	
Year 13	0	0	0	
Year 14	0	0	0	
Year 15	0	0	0	
10-15 Year Average Baseline GPCD				185
5 Year Baseline GPCD				
Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use
Year 1	2004	194,270	41,620	191
Year 2	2005	193,080	39,540	183
Year 3	2006	190,660	39,930	187
Year 4	2007	189,660	41,070	193
Year 5	2008	190,660	39,710	186
5 Year Average Baseline GPCD				188
2015 Compliance Year GPCD				
2015		199,680	25,540	114
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day*Summary From Table SB X7-7 Table 5*

10-15 Year Baseline GPCD	185
5 Year Baseline GPCD	188
2015 Compliance Year GPCD	114

NOTES:

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

Target Method		Supporting Documentation
☒	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D <i>Contact DWR for these tables</i>
☐	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator

NOTES:

SB X7-7 Table 7-A: Target Method 1	
20% Reduction	
10-15 Year Baseline	2020 Target
GPCD	GPCD
185	148
NOTES:	

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target

5 Year Baseline GPCD <i>From SB X7-7 Table 5</i>	Maximum 2020 Target*	Calculated 2020 Target <i>Fm Appropriate Target Table</i>	Confirmed 2020 Target
188	179	148	148

* Maximum 2020 Target is 95% of the 5 Year Baseline GPCD

NOTES:

SB X7-7 Table 8: 2015 Interim Target GPCD

Confirmed 2020 Target <i>Fm SB X7-7 Table 7-F</i>	10-15 year Baseline GPCD <i>Fm SB X7-7 Table 5</i>	2015 Interim Target GPCD
148	185	167

NOTES:

SB X7-7 Table 9: 2015 Compliance

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments <i>(in GPCD)</i>					2015 GPCD <i>(Adjusted if applicable)</i>	Did Supplier Achieve Targeted Reduction for 2015?
		Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD		
114	167	<i>From Methodology 8 (Optional)</i>	<i>From Methodology 8 (Optional)</i>	<i>From Methodology 8 (Optional)</i>	0	114	114	YES

NOTES:

Appendix F

Board of Directors Resolutions and Ordinances

This Appendix lists the Board resolutions and regulations pertaining to the Urban Water Management Plan and other District water conservation efforts. The resolutions are listed in Table F-1 and the regulations in Table F-2. The text of the resolution adopting the 2015 Urban Water Management Plan is included in this Appendix and follows Table F-2. Also provided in this appendix is a copy of Ordinance 15-01.

TABLE F-1. Resolutions Regarding the Urban Water Management Plan Update and Water Waste Prohibitions		
Resolution Number	Title	Status
16-12	A Resolution of the Board of Directors of the Contra Costa Water District Adopting the Urban Water Management Plan	Passed
15-01	An Ordinance of the Board of Directors of Contra Costa Water District Authorizing Drought Management Program Regulations	Passed
11-20	A Resolution of the Board of Directors of the Contra Costa Water District Adopting the Urban Water Management Plan	Passed
09-01	An Ordinance of the Board of Directors of Contra Costa Water District Authorizing Drought Management Program Regulations	Passed
09-03	A Resolution of the Board of Directors of Contra Costa Water District Declaring a Water Shortage Condition and Directing Preparation of a Proposed Ordinance to Include Water Use Reduction Goals by Customer Class and Other Elements Deemed Necessary to Sufficiently Conserve Available Water Supply	Passed
05-25	A Resolution of the Board of Directors of the Contra Costa Water District Authorizing Approval of the Urban Water Management Plan	Passed
00-28	A Resolution of the Board of Directors of the Contra Costa Water District Authorizing Approval of the Urban Water Management Plan	Passed
95-60	A Resolution of the Board of Directors of the Contra Costa Water District Adopting the Urban Water Management Plan	Passed
95-57	A Resolution of the Board of Directors of the Contra Costa Water District Authorizing Execution of a Project Specific Agreement for the Zone 1 Recycled Water Project Between Central Contra Costa Sanitary District and Contra Costa Water District	Passed
93-23	A Resolution of the Board of Directors of the Contra Costa Water District Enacting Water Waste Prohibitions Within the Area Served by this District	Passed
92-02	A Resolution of the Board of Directors of the Contra Costa Water District Adopting the Urban Water Shortage Contingency Plan of Said District	Passed. Superseded by resolution to adopt the update of the 1995 Urban Water Management Plan.
91-60	A Resolution of the Board of Directors of the Contra Costa Water District Amending the Drought Emergency Regulations of the District	Passed on December 11, 1991. Amended section 1 of Resolution No. 91-11 regarding effective period of regulations.

91-31	A Resolution of the Board of Directors of the Contra Costa Water District Amending Drought Emergency Regulations	Passed on June 26, 1991. Repealed mandatory water reduction provisions passed with Resolution No. 91-11
91-11	A Resolution of the Board of Directors of the Contra Costa Water District Adopting Drought Emergency Regulations Restricting the Quantity and Use of Water Supplied by the District and Imposing Penalties for Non-Compliance	Passed on March 6, 1991
91-10	A Resolution of the Board of Directors of the Contra Costa Water District Declaring a Water Shortage Emergency Condition to Prevail Within the Area Served by the District	Passed in February 1991
91-01	A Resolution of the Board of Directors of the Contra Costa Water District Amending the Urban Water Management Plan of Said District and Directing the Implementation of the Plan	Passed on January 9, 1991
90-79	A Resolution of the Board of Directors of the Contra Costa Water District Declaring Certain Policies in Regard to Recycled Water	Passed on November 7, 1990
90-59	A Resolution of the Board of Directors of the Contra Costa Water District Declaring the Urgent Need to Conserve Water and Challenging All Customers of the District to Improve Water Use Efficiency and to Avoid the Waste	Passed on July 11, 1990
90-44	A Resolution of the Board of Directors of the Contra Costa Water District Approving Revised Water Conservation Guidelines for New Developments and Urging Local Municipalities to Adopt Said Guidelines	Passed on May 16, 1990
88-25	A Resolution of the Board of Directors of the Contra Costa Water District Declaring the Need to Conserve Water and Urging the Raw Water Customers of the District to Improve Water Use Efficiency and to Avoid Waste and Unnecessary Use of Water	Passed on April 20, 1988
88-24	A Resolution of the Board of Directors of the Contra Costa Water District Declaring the Need to Conserve Water and Urging the Treated Water Customers of the District to Improve Water Use Efficiency and to Avoid Waste and Unnecessary Use of Water	Passed on April 20, 1988
85-31	A Resolution of the Board of Directors of the Contra Costa Water District Adopting Regulation No. 137, the Urban Water Management Plan of Contra Costa Water District	Passed on December 18, 1985
72-3	A Resolution of the Board of Directors of the Contra Costa Water District of Intent to Negotiate a Contract to Purchase Reclaimed Water	Passed on January 26, 1972
71-39	A Resolution of the Board of Directors of the Contra Costa Water District Declaring its Intention to Negotiate a Contract with Central Contra Costa Sanitary District for Reuse of Reclaimed Water	Passed on November 17, 1971

TABLE F-2. Regulations Regarding Water Conservation	
Chapter in District Regulations	Title
5.04	General Provisions
5.44	Water Conservation
7.20	Operating Plans

ORDINANCE NO. 15-01

AN ORDINANCE OF THE BOARD OF DIRECTORS OF CONTRA COSTA WATER DISTRICT ESTABLISHING A DROUGHT MANAGEMENT PROGRAM AS MANDATED BY THE GOVERNOR OF CALIFORNIA UNDER EXECUTIVE ORDER B-29-15

WHEREAS, the Contra Costa Water District (District) is a County Water District organized and existing pursuant to the County Water District Law, Division 12 of the California Water Code beginning with section 30000 and is empowered thereunder and under article XI, section 9 to provide raw and treated water service to its customers in northern, eastern and central Contra Costa County; and

WHEREAS, article X, 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 further declares that it is self-executing; and

WHEREAS, the District is authorized pursuant to sections 31024, 31026, 31027, 31028, 31029, and 31035 of the County Water District Law, and California Water Code sections 350 et seq., and sections 375 et seq., to establish and enforce rules and regulations for the sale, distribution, and use of water; and to enact rules and regulations to restrict the use of water during any water emergency caused by drought, or other threatened or existing water shortage, and to prohibit the wastage of District water or the use of District water during such periods, for any purpose other than household uses or such other restricted uses as may be determined to be necessary by the District and may prohibit use of such water during such periods for specific uses which the District may from time to time find to be non-essential; and

WHEREAS, District Regulations 5.04.020, 5.04.030, 5.04.060, and 5.04.070 provide further authority for the District's adoption of rules and regulations regarding the use of water delivered by the District, the prevention of waste or unreasonable use during times of water shortage, and compliance with District rules and regulations; and

WHEREAS, the California Governor formally declared a condition of statewide drought related emergency conditions on January 17, 2014, encouraging local water agencies to promote water conservation, and on April 25, 2014, by Executive Order, Governor Brown announced that he was strengthening the State's ability to respond to ongoing drought conditions and directed the State Water Resources Control Board (SWRCB) to notify urban water suppliers not already implementing drought contingency plans to limit outdoor irrigation and other wasteful practices; and

WHEREAS, the District adopted a 15% drought management program in April 2014 in response to the Governor's 2014 Executive Order and achieved a 15% reduction in water use compared to 2013, and a 24% reduction compared to the District's established baseline period of average use during 2005-2007, which represents normal customer usage before the recent periods of drought so as to recognize customers for their recent conservation efforts; and

WHEREAS, on July 15, 2014, the SWRCB approved emergency regulations mandating that residents and water suppliers take certain action relative to water use and use of potable water for irrigation purposes and on March 17, 2015, the SWRCB, in light of California entering a fourth year of extraordinary drought conditions, reauthorized the emergency regulations adopted in 2014, and approved additional mandates requiring water suppliers and businesses to take certain further actions relative to water use and use of potable water for irrigation purposes, including the imposition of fines of up to \$500 per day for each violation of the SWRCB emergency regulations, and the imposition of fines of up to \$10,000 per day against urban water suppliers found to be non-compliant with the SWRCB rules and regulations; and

WHEREAS, the California Governor formally declared on April 1, 2015, by Executive Order B-29-15 that a continued state of emergency exists due to water shortage and drought conditions, that the orders and provisions of Executive Orders B-26-14 and B-28-14 remain in full force and effect subject to modification by Executive Order B-29-15, and that he was directing the SWRCB to impose additional water use restrictions to achieve a statewide 25% reduction in potable urban water usage through February 28, 2016; and

WHEREAS, the SWRCB approved additional regulations on May 5, 2015 to implement Executive Order B-29-15, which requires the District to achieve an overall 28% reduction in potable urban water usage for its retail customers through February 28, 2016 compared to 2013 baseline usage; and

WHEREAS, the District has developed its drought management program to achieve the mandated 28% water use reduction by requiring greater than 25% reductions in water use for dedicated irrigation and agricultural customers who have a higher degree of discretionary water use; and

WHEREAS, the District's municipal retail customers are required to reduce their water use consistent with the Governor's Executive Order and SWRCB water use reduction requirements applicable to them; and

WHEREAS, the United States Bureau of Reclamation (Reclamation) has announced its initial 2015 water year allocations for the Central Valley Project (CVP) and has forecast that the water supply available to the District to be no more than 50,500 acre-feet under a median forecast; and

WHEREAS, drought conditions contribute to further uncertainty regarding regulatory conditions in the Sacramento-San Joaquin Delta that affect the amount and quality of water that can be legally moved from Reclamation's reservoirs to pumping plants in the Delta, including the District's; and

WHEREAS, as of the date of enactment of this ordinance and based on current and historic water supply availability, District staff projects that the District water supplies will be impacted in 2015-2016 as a result of drought conditions; and

WHEREAS, conservation and waste prevention measures are necessary to manage demands within the District to comply with emergency regulations of the State of California and to ensure sufficient water is available critical domestic, municipal and industrial water needs of the District's customers in 2015-2016, and to ensure that water supplies are not depleted in the event that the following year is also dry; and

WHEREAS, while District water conservation efforts, recycled water, and supplemental water purchases have stretched the District's available water supplies, discretionary outdoor water use will require further reduction pursuant to the actions and requirements of the Governor and SWRCB.

NOW THEREFORE BE IT ORDAINED by the Board of Directors of the Contra Costa Water District, in accordance with the applicable provisions of the California Constitution, the County Water District Law, and the Contra Costa Water District Code of Regulations, that the Board hereby finds, determines and declares:

1. Each of the facts recited above is incorporated herein; and
2. Based upon the facts recited above, and based upon the authority contained in Water Code sections 31026 et seq., sections 350 et seq., and in sections 375 et seq., a water shortage condition now exists within the District, and said shortage is caused by drought and other contributing factors; and
3. Conservation measures are required to meet the State mandated water use reduction target, and to conserve the use of water supplied by the District during this water shortage condition, to prevent waste or unnecessary use of water, to prohibit nonessential uses of water, and to conserve the District's water supply in order to meet critical needs of District customers in 2015, and to ensure that the District has an adequate amount of water at the end of 2015 so that customers' needs can still be met in 2016 even if dry conditions and other factors effecting water supply availability result in a continuing water shortage.

NOW THEREFORE BE IT FURTHER ORDAINED by the Board of Directors of the Contra Costa Water District as follows:

1. Based upon the facts recited above, and upon the authority contained in Water Code sections 350 et seq., sections 375 et seq., sections 31021 et seq., sections 31024 et seq., and sections 31026 et seq., drought conditions exist that can affect water supply and quality available to the District.
2. Conservation and measures to prevent waste and unreasonable use are necessary to manage demands so that reasonable water needs of District customers can be met in 2015-2016, and to ensure that water supplies are not depleted in the event that the following year is also dry.
3. The District intends to meet the overall drought management program reduction goal of 28% as established by the SWRCB by requiring the following reductions:

- a. Industrial customers are hereby required to reduce their water use by 5%, with water use for the same billing period during calendar year 2013 used as the baseline for reduction; and
 - b. Dedicated Irrigation and Agricultural customers are hereby required to reduce their irrigation water use by 45%, with water use for the same billing period during calendar year 2013 used as the baseline for reduction; and
 - c. Municipal Retail customers are hereby required to reduce their water use consistent with the Governor's Executive Order and SWRCB water use reduction requirements applicable to them; and
 - d. All other customer classes are hereby required to reduce their water use by 25%, with water use for the same billing period during calendar year 2013 used as the baseline for reduction.
4. Any customer whose account does not have consumption history for calendar year 2013, or whose usage has changed significantly due to changed conditions such as the addition of a family member, may apply for an exception pursuant to Paragraph 10 so that a 2013 water usage threshold amount may be established or modified.
5. The District shall implement a Temporary Conservation Pricing increase of \$0.50 per unit (748 gallons) in the treated water quantity charge, and of \$0.25 per 1,000 gallons in the untreated water quantity charge during the duration of this Drought Management Program applicable to all customer classes to provide a further pricing mechanism to promote water conservation consistent with the Governor's Executive Order. The pricing adjustment will cease by action of the Board of Directors or at the end of the full cycle of all customer billings following the lifting of the Governor's Executive Order. Residential customers with water use less than two hundred (200) gallons per day (gpd) are considered efficient and will be credited back the pricing adjustment if use over the entire billing cycle averages less than 200 gpd.
6. The water use prohibitions, attached hereto as Exhibit and incorporated herein as if fully set forth, are necessary to conserve water, promote effective water supply planning, assure reasonable and beneficial use of water, prevent waste and unreasonable use of water, and prevent unreasonable methods of use of water within the District; and said water use prohibitions are necessary to assure that sufficient supplies of water will be available to meet the needs of, and to protect the health and safety of, the District's customers and other members of the public. This paragraph is not a limit on the District's authority to determine that a customer is wasting or failing to put water received from the District to reasonable and beneficial use.
7. After the publication or posting of any ordinance as provided in Section 31027, it is a misdemeanor for any person to use or apply water received from the District contrary to or in violation of its Drought Management Program, or other restrictions or prohibitions on water use contained in the District Code of Regulations, and, upon notice thereof, that person shall be subject to punishment by an administrative fine of not more than two

hundred fifty dollars (\$250) for a first offense, five hundred dollars (\$500) for a second offense, each administrative fine to be accompanied by an additional penalty of up to \$10 per unit of water used or applied in violation of or contrary to this ordinance, an amount to be determined in the District's sole discretion. Each and every day a violation of this exists constitutes a separate and distinct offense for which an administrative fine and penalty may be assessed. The District, in its sole discretion, may choose to provide a warning to alleged violators prior to imposing administrative fines or penalties pursuant to this ordinance, which warning shall not itself constitute a violation of the rules and regulations. Administrative fines or penalties are to be imposed pursuant to the authority provided in California Government Code section 53069.4, or such additional authority as may later be approved by the Governor pursuant to the California Emergency Services Act or Executive Order, or by action of the California Legislature.

8. The purpose of the administrative fines and penalties assessed pursuant to this Ordinance is to assure future compliance by customers through the imposition of increasingly significant fines and penalties so as to create a meaningful disincentive to commit future violations of the rules and regulations contained and referenced herein.
9. Violations of this ordinance, and the rules and regulations contained and referenced herein, shall remain subject to administrative fines and penalties, until this ordinance has been repealed, or the emergency or threatened emergency has ceased as evidenced by termination of the statewide emergency declared by the Governor, or termination of the emergency regulations adopted by the SWRCB. Pricing adjustments contained herein will cease by action of the Board of Directors or at the end of the customer billing period following the lifting of the Executive Order. Violations pursuant to other District rules, regulations, or federal or state law shall not be affected by this section and shall continue to be enforced pursuant to their terms. The District reserves the right to pursue, in its sole discretion, any additional remedies available to it by law, including criminal, civil and administrative remedies as necessary.
10. Written applications for exceptions to, or waivers from, any provision of this Drought Management Program, including fines and penalties, shall be submitted to the District using a form prepared for such use and provided by the District, and shall be granted in any case where the District determines, in its sole reasonable discretion, that the applicable water usage threshold, restriction, or prohibition may create a hazard to the health and safety of any individual or the public, or would cause undue hardship, including but not limited to, adverse economic impacts such as loss of production or jobs. Denial of an application for exception or waiver may be appealed in writing to the District's General Manager or his designee, whose decision shall be final and binding.
11. If a customer fails to take prompt, reasonable action to stop wasteful use, the District may at its discretion suspend delivery of water to the customer or install a device to restrict the flow of water to the customer, or terminate service until the District determines, at its sole reasonable discretion, that there will be no further wasteful use of water by the customer. All applicable District fees for the installation or removal of a water restricting device or for disconnection or reconnection of service shall apply. District determinations made

pursuant to this Ordinance may be appealed in writing to the District's General Manager or his designee, whose decision shall be final and binding.

12. If any provision of this ordinance, including the rules and regulations referenced herein, or any part thereof, is for any reason held to be ultra vires, invalid, or unconstitutional, the remaining provisions of this ordinance shall not be affected, but shall remain in full force and effect, and to this end the provisions of this ordinance are severable.
13. The rules and regulations contained in this ordinance shall take effect immediately after its adoption pursuant to Water Code section 31027, except that the fines and penalties contained in Section 7 shall take effect following publication of this ordinance pursuant to Water Code section 31027. A summary of this ordinance was published at least five days prior to adoption and said summary will be published again within fifteen days of this adoption in a newspaper of general circulation within the District. The General Manager is authorized to cause the rules and regulations established hereby to be inserted in Title 5 of the Contra Costa Water District Code of Regulations and to effect the immediate enforcement thereof. Should any rule or regulation contained or referenced herein conflict with an existing District rule or regulation, the conflicting rule or regulation contained or referenced herein shall apply during the time in which this Ordinance is in effect and operative.
14. CCWD Resolution 2015-09 is hereby repealed and superseded in full by this Ordinance 15-01 upon this Ordinance becoming effective and operative.

The foregoing Ordinance was duly and regularly adopted at a meeting thereof held on June 3, 2015, by the Board of Directors of Contra Costa Water District, by the following vote of the Board:

AYES: Burgh, Boatmun, Borba, Campbell, Holdaway

NOES:

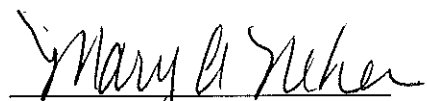
ABSTAIN:

ABSENT:



Joseph L. Campbell, President

ATTEST:



Mary A. Neher
District Secretary

WATER USE PROHIBITIONS

The following uses of water supplied by the District have been determined to be wasteful and are prohibited at any time when a Drought Management Program is in effect:

Single Family and Multi-Family Residential Customers

- a. Watering of outdoor landscapes in a manner that causes excessive runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.
- b. Watering of outdoor landscapes during and up to 48 hours after measurable rainfall.
- c. Watering of outdoor landscapes more than two days per week unless an exception is granted by the District. Examples include newly planted drip irrigated drought tolerant landscaping, and vegetable gardens.
- d. Watering of outdoor landscapes during the daylight hours of 9AM-5PM.
- e. Watering of landscape of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development.
- f. Washing a vehicle, trailer or boat using a hose without a shut off nozzle.
- g. Washing paved or other hard-surfaced areas, including sidewalks, walkways, driveways, patios, and parking areas.
- h. Use of water for non-recirculating decorative fountains or filling decorative lakes or ponds. The District strongly suggests all fountains be turned off.

Non-Residential Customers

- a. Watering of outdoor landscapes in a manner that causes excessive runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.
- b. Watering of outdoor landscapes during and up to 48 hours after measurable rainfall.
- c. Watering of outdoor landscapes more than two days per week unless an exception is granted by the District. Examples include newly planted drip irrigated drought tolerant landscaping, and vegetable gardens.
- d. Watering of outdoor landscapes during the daylight hours of 9AM-5PM.
- e. Watering of ornamental turf on public street medians.
- f. Watering of landscape of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development.
- g. Washing a vehicle, trailer or boat using a hose without a shut off nozzle.
- h. Washing paved or other hard-surfaced areas, including sidewalks, walkways, driveways, patios, and parking areas.
- i. Use of water for non-recirculating decorative fountains or filling decorative lakes or ponds. The District strongly suggests all fountains be turned off.

Drought Management Program
Water Use Prohibitions
Page 2

- j. Serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased.
- k. Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. A notice shall be prominently displayed in each bathroom.
- l. Recycled water must be used for construction and dust control unless not available.

Appendix G

AWWA Water Loss Audit



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association
Copyright © 2014, All Rights Reserved.

?	Click to access definition
+	Click to add a comment

Water Audit Report for: **Contra Costa Water District**
Reporting Year: **2015** **1/2015 - 12/2015**

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

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

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

WATER SUPPLIED

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

Volume from own sources:	+	?	7	28,437.900	acre-ft/yr
Water imported:	+	?	7	51.600	acre-ft/yr
Water exported:	+	?	7	2,282.700	acre-ft/yr

Master Meter and Supply Error Adjustments

Pcnt:	+	?			Value:		acre-ft/yr
	+	?					acre-ft/yr
	+	?					acre-ft/yr

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

WATER SUPPLIED: **26,206.800** acre-ft/yr

AUTHORIZED CONSUMPTION

Billed metered:	+	?	9	23,599.100	acre-ft/yr
Billed unmetered:	+	?	10	0.000	acre-ft/yr
Unbilled metered:	+	?	9	531.700	acre-ft/yr
Unbilled unmetered:	+	?		327.585	acre-ft/yr

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

AUTHORIZED CONSUMPTION: **24,458.385** acre-ft/yr

Click here: ?
for help using option
buttons below

Pcnt:	+	?			Value:		acre-ft/yr
	+	?					acre-ft/yr

Use buttons to select
percentage of water supplied
OR
value

WATER LOSSES (Water Supplied - Authorized Consumption)

Apparent Losses

Unauthorized consumption: **65.517** acre-ft/yr

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

Customer metering inaccuracies:	+	?	8	342.628	acre-ft/yr
Systematic data handling errors:	+	?		58.998	acre-ft/yr

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

Apparent Losses: **467.143** acre-ft/yr

Pcnt:	+	?			Value:		acre-ft/yr
	+	?					acre-ft/yr

1.40%	+	?					acre-ft/yr
0.25%	+	?					acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: **1,281.272** acre-ft/yr

WATER LOSSES: **1,748.415** acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: **2,607.700** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+	?	9	808.0	miles
Number of <u>active AND inactive</u> service connections:	+	?	8	61,459	
Service connection density:	+	?		76	conn./mile main

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

Average length of customer service line: **?**

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

Average operating pressure: **?** **73.0** psi

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

COST DATA

Total annual cost of operating water system:	+	?	8	\$36,684,000	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+	?	9	\$3.45	\$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+	?	9	\$241.00	\$/acre-ft

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 77 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: Volume from own sources
- 2: Unauthorized consumption
- 3: Systematic data handling errors

Appendix H

Public Notifications

Contra Costa Water District
1331 Concord Avenue
PO BOX H2O
Concord, CA 94524

The Contra Costa Water District will hold a public hearing to accept comments on its draft 2015 URBAN WATER MANAGEMENT PLAN which was developed in compliance with the State of California's Urban Water Management Plan Act which is codified under the California Water Code Section 10610 et seq.

Date: Wednesday, June 1, 2016

Time: 6:30 PM

Place: Board Room, Contra Costa Water District 1331 Concord Avenue Concord, CA

A copy of the draft report is available for review on the District's website (www.ccwater.com) and at the District Office located at 1331 Concord Ave.

CCT/ECT #5718609; May 16, 23, 2016



Board of Directors

Lisa M. Borba, AICP
President

John A. Burgh
Vice President

Ernesto A. Avila, P.E.

Bette Boatman

Connstance Holdaway

General Manager

Jerry Brown

May 16, 2016

Mr. Eric Brennan
City of Brentwood
2201 Elkins Way
Brentwood, CA 94513

Subject: Draft 2015 Urban Water Management Plan

Dear Mr. Brennan:

In accordance with the Urban Water Management Planning Act (California Water Code Section 10610 et seq.), the Contra Costa Water District (District) is currently updating its Urban Water Management Plan (UWMP), which was last adopted by the District's Board of Directors in June 2011. The UWMP provides information on the District's water supply and demand forecasts, water shortage contingency planning, and other ongoing activities to ensure adequate water supply for existing and future demands.

The District has completed its draft 2015 UWMP, and is notifying interested parties of a public hearing on the draft plan. The draft plan is available for review on the District's website at www.ccwater.com or at District offices at 2411 Bisso Lane in Concord. An electronic or hard copy can be provided upon request. Written comments should be addressed to me and are due by 5:00 pm on Tuesday, May 31, 2016.

A public hearing on the draft plan will be held on Wednesday, June 1, 2016 at 6:30 pm in the Board Room of the District offices located at 1331 Concord Avenue in Concord. The 2015 UWMP will be considered for Board adoption on June 15, 2016. Please contact me at (925) 688-8127 or klin@ccwater.com if you have any questions about the District's UWMP update.

Sincerely,

A handwritten signature in blue ink, appearing to read "KL", is written over a faint, larger signature.

Kimberly Lin, P.E.
Senior Engineer

KL/rlr

Mailing List for UWMP Notifications

(Updated 2/16/2016)

Municipal Customers

Mr. Mike Yeraka, General Manager
Diablo Water District
P.O. Box 127
Oakley, CA 94561
mikegm1@aol.com

Mr. Tim Coley
Water Treatment Supervisor
City of Antioch
P.O. Box 5007
Antioch, CA 94509
tcoley@ci.antioch.ca.us

Mr. Walter Pease
Director of Water Utilities
City of Pittsburg
65 Civic Drive
Pittsburg, CA 94565
wpease@ci.pittsburg.ca.us

Mr. Mark Insko
Senior Civil Engineer
Golden State Water Company
3005 Gold Canal Drive
Rancho Cordova, CA 95670
markinsco@gswater.com

Mr. Tim Tucker
City Engineer
City of Martinez
525 Henrietta Street
Martinez, CA 94553
ttucker@cityofmartinez.org

Wastewater Agencies

Mr. Jean-Marc Petit, Director
Engineering & Technical Services
Central Contra Costa Sanitary District
5019 Imhoff Place
Martinez, CA 94553-4392
jmpetit@centralsan.org

Mr. Phil Govea, Director
Engineering Services
Delta Diablo Sanitation District
2500 Pittsburg-Antioch Highway
Antioch, CA 94509-13732
philg@deltadiablo.org

Mr. Neal Allen, District Manager
Mt. View Sanitary District
P.O. Box 2757
Martinez CA, 94553
nallen@mvsd.org

Mr. Chad Davisson, General Manager
Ironhouse Sanitary District
450 Walnut Meadows Drive
Oakley, CA 94561
davisson@isd.us.com

Cities and Communities

Mr. John Kopchik, Director
Department of Conservation and Development
Contra Costa County
30 Muir Road
Martinez, CA 94553
John.kopchik@dcd.cccounty.us

Ms. Laura Simpson
Planning Manager
City of Concord
1950 Parkside Drive
Concord, CA 94519
Laura.Simpson@cityofconcord.org

Ms. Mindy Gentry, Director
Community Development Department
City of Clayton
6000 Heritage Trail
Clayton, CA 94517
mgentry@ci.clayton.ca.us

Mr. Josh McMurray, Planning Manager
City of Oakley – City Hall
3231 Main Street
Oakley, CA 94561
jmcmurray@ci.oakley.ca

Ms. Sandra Meyer, AICP, Director
Community Development Department
City of Walnut Creek
1666 North Main Street
Walnut Creek, CA 94596
meyer@ci.walnut-creek.ca.us

Mr. Greg Fuz, Manager
Community Development Department
City of Pleasant Hill
100 Gregory Lane
Pleasant Hill, CA 94523
gful@pleasanthillca.org

Mr. Tim Tucker, Manager
Engineering Division
City of Martinez
525 Henrietta Street
Martinez, CA 94553
ttucker@cityofmartinez.org

Mr. Eric Brennan
Water Operations Manager
City of Brentwood
2201 Elkins Way
Brentwood, CA 94513-7344
Chris Ehlers: cehlers@brentwoodca.gov
Eric Brennan: ebrennan@brentwoodca.gov
Diana Williford: dwilliford@brentwoodca.gov

Appendix I

UWMP Adoption Resolution


Mary A. Neher, District Secretary
Contra Costa Water District

RESOLUTION NO. 16-12

**A RESOLUTION OF THE BOARD OF DIRECTORS OF
THE CONTRA COSTA WATER DISTRICT ADOPTING THE
URBAN WATER MANAGEMENT PLAN**

WHEREAS, the Urban Water Management Planning Act (Act), which is codified at California Water Code Section 10610 et seq. (Chapter 1009, Statutes of 1983 and subsequent amendments thereto, including SB X7-7, the Water Conservation Act of 2009), requires that every urban water supplier which provides 3,000 acre-feet or more of water annually, or which directly or indirectly supplies water for municipal purposes to more than 3,000 customers, shall prepare an Urban Water Management Plan (Plan), the primary objective of which is to plan for the reliable delivery of urban water supplies and for the conservation and efficient use of water; and

WHEREAS, the Contra Costa Water District is an urban water supplier providing in excess of 3,000 acre-feet of water per year to over 3,000 treated water customer connections, and providing additional untreated and treated water at wholesale to municipal and industrial customers; and

WHEREAS, the Act requires that the Plan shall be periodically reviewed at least once every five years, and that the District shall make amendments or changes to its Plan which are indicated by the review and the District has engaged in the required review; and

WHEREAS, the 2015 Plan must be adopted by the District's Board of Directors, after public review and a Public Hearing by the District, and must be filed with the California Department of Water Resources by July 1, 2016 and to other specified entities pursuant to Water Code section 10644(a)(1) within 30 days after adoption; and

WHEREAS, in accordance with Water Code section 10621(b), the District notified the county and cities in its jurisdiction, along with other interested parties, of the preparation of this 2015 Urban Water Management Plan, and coordinated with those agencies for its preparation; and

WHEREAS, the District has heretofore prepared, and commencing on May 16, 2016, circulated for public review, a Draft 2015 Urban Water Management Plan, in compliance with the requirements of the Act, and duly noticed a Public Hearing on said Draft Plan, and having conducted a Public Hearing before the Board of Directors in accordance with said notice on June 1, 2016, and no objections having been raised, said Draft Plan now may be finalized and adopted as prepared.

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

1. The Board does hereby find, determine, and declare that:
 - a. The District has prepared said Draft Urban Water Management Plan (Draft Plan), dated May 2016.
 - b. A copy of the Draft Plan has been available for public inspection at the principal office of the District and on the District's website continuously since May 16, 2016.
 - c. On June 1, 2016, this Board held a Public Hearing on the Draft Plan. Notice of the time and place of said Hearing was published in the Contra Costa Times, a newspaper of general circulation, on May 16, 2016 and May 23, 2016 pursuant to Government Code section 6066.
 - d. The Board has considered all public comments received and hereby approves and adopts the 2015 Urban Water Management Plan dated June 2016 prepared by the District.
 - e. This 2015 UWMP updates and supersedes all previous UWMPs prepared by the District.
2. The General Manager or his designee is hereby authorized and directed to submit the Plan to the California Department of Water Resources by July 1, 2016 and to other specified entities pursuant to Water Code section 10644(a)(1) within 30 days after this date.

3. The General Manager shall, from time to time, submit to this Board recommended policies and actions to implement effective and equitable water conservation and allocation programs in accordance with the Plan and to meet urban water use targets as required by the Water Conservation Act of 2009.

* * * * *

The foregoing Resolution was duly and regularly adopted at a regular meeting held on the 15th day of June 2016, by the Board of Directors of the Contra Costa Water District by the following vote of the Board.

AYES: Boatmun, Burgh, Avila, Borba, Holdaway

NOES:

ABSTAIN:

ABSENT:



Lisa M. Borba, President

ATTEST:



Mary A. Neher
District Secretary

Errata Sheet for Minor Corrections to Contra Costa Water District 2015 Urban Water Management Plan (UWMP)

This errata sheet logs minor content errors that were identified after final adoption of the Contra Costa Water District 2015 UWMP. DWR has determined that these corrections are minor and do not require the UWMP to be amended.

X These data errors have been corrected in the Department of Water Resources (DWR) UWMP database at <http://wuedata.water.ca.gov>.

X This errata sheet has been filed with the UWMP in all locations where it is made publicly available, including the California State Library.

Name and agency of the person filing errata sheet:

Kimberly Lin

Name

Contra Costa Water District

Agency

#	Description of Correction	Location	Rationale	Date Error Corrected
1	The volume of wastewater collected at CCCSD in 2015 was corrected from 43,800 AF to 36,622 AF in Table 6-2R.	Table 6-2R on Page 6-9	The value had not been updated since the 2010 UWMP. The new value is updated for 2015.	October 7, 2016
2	The volume recycled within the service area by CCCSD was revised from 1,792 AF to 600 AF in Table 6-3R. A clarifying note (c) was also added in the Notes section.	Table 6-3R on Page 6-11	The revised value of 600 AF excludes the recycled water volume used for internal reuse at the CCCSD treatment plant. Per DWR guidelines, internal reuse of recycled water at wastewater facilities should not be included.	October 7, 2016