



Dublin San Ramon Services District
2010 Urban Water Management Plan

June 2011



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Executive Summary

ES.1 Overview

Dublin San Ramon Services District (DSRSD) is subject to the California Urban Water Management Planning Act (UWMP Act) and SBx7_7, the Water Conservation Act of 2009. DSRSD is an urban water supplier that delivered 8,801 acre-feet (AF) of potable water and 1,729 AF of recycled water to approximately 17,955 customers¹ in the City of Dublin in Alameda County, California, and the Dougherty Valley area of San Ramon in Contra Costa County, California in 2010.

The UWMP Act requires urban water suppliers to report, describe, and evaluate water deliveries and uses, water supply sources, efficient water uses, and demand management measures (DMMs), including implementation strategy and schedule. DSRSD prepared this *2010 Urban Water Management Plan (UWMP)* to conform to the UWMP Act as updated, Senate Bill (SB) 610 Water Supply Assessments and SB 221 Written Verifications of Water Supply, Assembly Bill (AB) 1420 (implementation of the Water Conservation Act of Water Demand Management Measures), and SBx7_7, the Water Conservation Act of 2009. The latter requires urban water suppliers to report 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.

Additionally, DSRSD has applied for the California Department of Water Resources (DWR) Proposition 84 Round 1 Implementation Grant as part of the San Francisco Bay Area Integrated Regional Water Management Plan. Completion of this 2010 UWMP is a condition of receiving a grant award.

ES.2 Plan Preparation, Coordination and Adoption

The preparation and adoption of this 2010 UWMP is discussed in detail in Section 1. DSRSD coordinated with Zone 7 Water Agency (Zone 7, the region's water wholesaler) and the region's other water retailers to compile a complete assessment of the region's available water supply and projected water demands for Zone 7's 2010 UWMP. Zone 7 also provided assistance to DSRSD in the preparation of this UWMP. The results of Zone 7's regional analysis appear in Sections 3, 4, and 5 of this 2010 UWMP.

1. DSRSD Engineering Department, number of DSRSD potable and recycled water meters as of December 31, 2010.

DSRSD coordinates continually with Zone 7, City of Dublin, City of San Ramon, Alameda County, and Contra Costa County to ensure that a safe and reliable water supply is delivered to existing customers and that plans for serving future customers are implemented as efficiently as possible. These agencies, along with the region's other water retailers, were provided copies of the Draft 2010 UWMP to ensure that they are informed about current and future water supply issues facing DSRSD. DSRSD also sought public participation by posting notices on DSRSD's web site, at the DSRSD office, and in the local newspaper. DSRSD also printed a message on its water bills encouraging customers to visit DSRSD's website regarding preparation of this UWMP.

The DSRSD Board of Directors will hold a public hearing on this UWMP at its May 17, 2011 regularly scheduled meeting. At the meeting, the requirements of the Water Conservation Act of 2009 will be discussed, including how DSRSD selected methods for calculating baseline use and its 2015 interim target, 2020 urban water use target, and minimum water reduction target. At its June 7, 2011 regularly scheduled meeting, the DSRSD Board of Directors will consider the adoption of this UWMP and the *Water Shortage Contingency and Drought Plan*.

Within 30 days of adoption, this 2010 UWMP will be submitted to the Department of Water Resources (DWR) and the California State Library. Copies of the adopted, final 2010 UWMP will be provided to Zone 7 and the cities and counties where DSRSD provides water service. A copy will also be available at the library, and in the DSRSD main office in Dublin.

ES.3 Implementation

Implementation is discussed in detail in Section 1.4. DSRSD has long been committed to reducing the demand for potable water through conservation and water recycling. DSRSD has been implementing the Demand Management Measures (DMMs) outlined in the UWMP Act and has successfully reduced potable water demand in its service area by over 20 percent per account since 2007. This water use reduction has been the result of an aggressive water conservation program, with public outreach and extensive education programs, and voluntary conservation by DSRSD's customers. DSRSD has also been aggressive in expanding the use of recycled water. Although the recent drought conditions have ended, the need for ongoing water conservation continues.

As discussed in Section 2.3, the population of DSRSD's service area is expected to increase by 50 percent between 2010 and 2030 due to planned development. DSRSD faces challenges in maintaining an adequate and reliable water supply to meet existing and future demand due to uncertainties in water supplies conveyed through the San Joaquin Delta (a primary source of Zone 7's water supply). Additionally, DSRSD is committed to complying with the requirements of AB 1420, SB 1087, and the Water Conservation Act of 2009. Compliance with these legislative requirements will not only conserve valuable water

resources, but will keep DSRSD eligible for state grants that can be used to fund new programs.

As discussed in Section 3.4, DSRSD customers have already met and surpassed the District's 2020 urban water use target. To sustain this current level of conservation, DSRSD plans to continue implementing water conservation programs and the DMMs described in Section 6, as well as monitoring their effectiveness. In addition, as described in Section 4.5, DSRSD will continue to actively promote water recycling. If its customers deviate from the target, DSRSD plans to implement demand reduction programs in its portfolio based on affordability and certainty of water savings.

ES.4 Water System Description

DSRSD's service area is described in detail in Section 2. DSRSD is located in the East Bay's Livermore-Amador Valley near the Interstate 580/680 interchange. DSRSD provides both potable and recycled water to its customers. DSRSD's current water service area includes the original service area in Dublin in Alameda County, as well as approved development in eastern Dublin, western Dublin, and the Dougherty Valley portion of San Ramon in Contra Costa County. DSRSD's water service area also includes the U.S. Army Reserve's Parks Reserve Forces Training Area (Camp Parks), which officially became part of the water system in 1999; the Federal Bureau of Prison's Federal Correctional Institution at Dublin (FCI), and Alameda County's Santa Rita Jail.

Zone 7 is DSRSD's sole potable water supplier. Treated potable water enters DSRSD's distribution system through five metered turnouts in the Zone 7 transmission system. DSRSD produces recycled water at its wastewater treatment plant at the Recycled Water Treatment Facilities (RWTF). The recycled water meets the California Title 22 requirements for unrestricted reuse.

The original DSRSD potable water distribution system in central Dublin consisted of four pressure zones. This system has continued to expand as development has occurred in eastern Dublin, western Dublin, and Dougherty Valley. Additional pressure zones with different service elevations have been installed to serve newly developed areas.

DSRSD began constructing its major recycled water infrastructure in 1998. The system continues to expand with the construction of approved development in eastern Dublin and Dougherty Valley. The entire DSRSD recycled water distribution system currently includes 56 miles of recycled water pipelines.

DSRSD currently supplies potable water to approximately 17,671 residential, commercial, construction, and landscape irrigation customers² in the City of Dublin and the Dougherty Valley area of San Ramon. DSRSD also supplies recycled water to 283 landscape irrigation

2. Total number of potable water service accounts.

customers in the City of Dublin (east of Highway 680) and Dougherty Valley.³ An estimated 68,536 people currently live in DSRSD's service area. Based on the *City of Dublin General Plan and 2009-2014 Housing Element*, and the *City of San Ramon General Plan 2030 and Dougherty Valley Specific Plan*, DSRSD expects the total population to increase by 34,581 people (50 percent) from 2010 to 2035. The City of Dublin is projected to buildout in 2030, while Dougherty Valley is projected to buildout in 2020.

ES.5 System Demands

DSRSD system demands are discussed in detail in Section 3.

Compliance with Water Conservation Act of 2009

The Water Conservation Act of 2009 includes the "20% by 2020 Water Conservation Plan," which sets a goal of achieving a 20 percent statewide reduction in urban per capita water use and directs urban retail water suppliers to set 2020 urban water use targets. Although Zone 7 and all water retailers in the Livermore-Amador Valley conduct water conservation efforts regionally, DSRSD is complying with the Water Conservation Act of 2009 individually.

DSRSD determined its baseline, selected a method for calculating its interim and urban water use targets, and determined its minimum water use reduction target in accordance with technical methodologies and criteria developed by DWR. In making these selections, DSRSD was careful to avoid penalizing its customers, who have successfully implemented water conservation measures in recent years.

- For baseline calculations, DSRSD selected a continuous 10-year period ending December 2005. The base daily per capita water use during this period is **204 gallons per capita per day (GPCD)**.
- To calculate the minimum required reduction in water use by 2020, DSRSD selected a continuous five-year base period ending December 31, 2007. The base daily per capita water use during this period is **185 GPCD**. The minimum water use target to be achieved by 2020 is 95 percent of this baseline. DSRSD must achieve the lesser of the minimum water use target or the urban water use target by 2020.
- DSRSD has selected **Method 1** to calculate its interim and urban water use targets. The interim water use target to be achieved by 2015 is 90 percent of the baseline. The urban water use target to be achieved by 2020 is 80 percent of the baseline.

3. Total number of recycled water service accounts.

- The resulting targets are shown in Table ES-1. Because the calculated urban water use target is less than the minimum water use target, DSRSD's water use target for 2020 is 163 GPCD.

Table ES-1. DSRSD Interim and Urban Water Use Targets using Method 1		
	Compliance Year	Target
Interim Target	2015	183
Urban Water Use Target	2020	163
Minimum Water Use Target	2020	175

Water Demand Projections

DSRSD projected water demand based on the approved general plans in the cities and counties in DSRSD's service area. DSRSD's projection uses the buildout projections of the general plans as its endpoint. DSRSD applied water demand factors in gallons per day per unit or gallons per day per square foot for the various land uses. The water demand factors are based on actual water consumption for the various land uses. DSRSD's water demand projections are shown in Table ES-2. The communities that DSRSD serves have approved planned developments that will result in increased total water demand by 113 percent between 2010 and 2035. Significant development construction in DSRSD's service area began in 1998 and is expected to continue until 2030. As discussed in Section 3.2.6, the potable water demands meet or surpass the interim and urban water use targets listed above.

Table ES-2. DSRSD Total Water Demand Projections (AFA)						
Water Use	2010*	2015	2020	2025	2030	2035
POTABLE WATER						
Total potable water deliveries (from Table 3-5)	8,801	12,209	15,167	16,584	17,294	17,564
Potable water sales to other water agencies (from Table 3-7)	0	0	0	0	0	0
Additional potable water uses and losses (from Table 3-8)	463	643	798	873	910	924
Total Potable Water Demand	9,264	12,851	15,965	17,457	18,204	18,488
RECYCLED WATER						
Total recycled water deliveries (from Table 3-5)	1,264	2,017	3,271	3,841	3,952	4,064
Recycled water sales to other water agencies (from Table 3-7)	1,248	2,086	3,048	3,048	3,048	3,048
Additional recycled water uses and losses (from Table 3-8)	465	465	465	465	465	465
Total Recycled Water Demand	2,977	4,568	6,784	7,354	7,465	7,577
Total	12,241	17,419	22,749	24,811	25,669	26,065
<i>*Actual Water Use</i>						

Water Use Reduction Plan

DSRSD has a strong commitment to reducing potable water demand through conservation and use of recycled water. Because of the current drought and limited water deliveries from the Delta, DSRSD has requested voluntary water conservation from customers. Current efforts have been so successful that daily per capita water use in 2010 is well below the 2020 urban water use target. However, behavioral modification is responsible for much of the reduction, and DSRSD anticipates a rebound in demand as customers revert to some of their pre-drought water use habits.

As outlined in its *Strategic Plan FY 2010-2014, Second Edition*, DSRSD plans to maintain the current level of conservation as the foundation of a comprehensive water conservation program and investigate and implement, as appropriate, permanent demand reduction programs that are shown to be effective and affordable. DSRSD also plans to continue to connect future, planned development projects to recycled water.

DSRSD's current water conservation program targets all of the various customer sectors in its service area. DSRSD's recycled water program targets new development projects and high irrigation water uses. Funding for these programs is equitably allocated among those who benefit. In complying with its 2020 urban water use target, DSRSD plans to avoid placing a disproportionate burden on any customer sector.

ES.6 System Supplies

DSRSD's system supplies are discussed in detail in Section 4.

Potable Water

By contract, Zone 7 is DSRSD's sole potable water supplier. The current contract between Zone 7 and DSRSD was entered into on August 23, 1994 and has a 30-year term. Provisions of the contract are discussed in Section 4.4.1. The current contract is expected to be renewed beyond 2024 with substantially similar provisions. Zone 7 uses a combination of water supplies and water storage facilities to meet DSRSD's water demands. Zone 7's water supply sources and storage are described in detail in Section 4.1 and summarized in Table ES-3 and Table ES-4. Water stored by Zone 7 comes from the supplies listed in Table ES-3.

Table ES-3. Wholesale Supplies — Zone 7 Water Agency Existing and Planned Sources of Water Supply in Normal Years (AFA)¹						
Wholesale Sources	Contracted Volume	2015	2020	2025	2030	2035
Imported Surface Water						
SWP-Table A ²	80,619	51,400	51,400	51,400	51,400	51,400
SWP - Yuba Accord ³	No fixed cap	145	145	145	0	0
BBID ⁴	5,000	4,500	4,500	4,500	4,500	4,500
Local Runoff						
Arroyo Del Valle ⁵	30,000	7,100	7,100	7,100	7,100	7,100
Total Wholesale Water Supply		63,145	63,145	63,145	63,000	63,000
¹ Normal water years are defined as the median yield for Zone 7's 2010 UWMP. The table does not show groundwater pumping from the Main Basin as it represents water stored from the sources already listed above.						
² The amount listed here is the projected median yield, after correcting for carryover, in the 2009 State Water Project Delivery Reliability Report.						
³ The Yuba Accord contract ends in 2025.						
⁴ Byron Bethany Irrigation District. Historical deliveries cannot be used to develop water supply yields. A review of cumulative rainfall in 2009 and 2010 indicates that both years were at or above the historic median rainfall. Deliveries from this contract were 4,500 and 5,000 AF in 2009 and 2010, respectively. A yield of 4,500 AF was assumed available during normal water years.						
⁵ Zone 7, along with Alameda County Water District (ACWD), has a water right permit [Permit 11319 (Application 17002)] to divert runoff from Arroyo del Valle. Inflows to Lake Del Valle, after accounting for permit conditions, are equally divided between Zone 7 and ACWD. The two agencies' diversions cannot exceed 60,000 AFA. Planned water source volume is based on inflow date (actual and estimated) and existing diversion or facility limitations. The median supply available is						

Table ES-4. Zone 7's Water Storage Options			
Storage Option		Water in Storage through April 2010^(a) (Acre-Feet)	Total Storage Capacity (Acre-Feet)
Local	Lake Del Valle	4,900	7,500
	Main Basin	74,000	126,000
Non-Local	Semitropic	78,100	78,000
	Cawelo	5,000	120,000
Total Storage		162,000	331,500
¹ As presented in the May 2010 Annual Review of Sustainable Water Supply for Zone 7 Water Agency. Note that Zone 7 also has "carryover" water available in the SWP, amounting to 20,500 AF as of April 2010.			

DSRSD's water supply contract with Zone 7 provides DSRSD to purchase from Zone 7 all water required by DSRSD for use within DSRSD's service area, except that DSRSD may

extract groundwater per the contract provisions or obtain water from “Other Sources” as defined in the contract. DSRSD has a groundwater pumping quota (GPQ) of 645 AFA from the Livermore-Amador Valley Main Basin (Main Basin). By contract, Zone 7 conducts this groundwater pumping operation as part of providing water supply services to DSRSD. This groundwater is blended with water from Zone 7’s other sources and delivered to DSRSD.

Currently, Zone 7 has a reliability policy in place (adopted in 2004) to meet 100 percent of water demands over the next 20 years through average water years, single dry years, and multiple dry years. As discussed in its 2010 UWMP, Zone 7 continues to explore other options for acquiring additional future water supplies to meet the demands of its customers, which include all of the water retailers in the Livermore-Amador Valley and the cities they serve. DSRSD does not plan to pursue other water supply projects because, by contract with Zone 7, DSRSD may not pursue such projects. DSRSD defers to Zone 7 in maintaining its current water supplies and seeking future water supply opportunities.

Recycled Water

DSRSD’s water supply contract with Zone 7 allows it to pursue water recycling opportunities. DSRSD currently produces and distributes recycled water in its service area. DSRSD owns and operates recycled water treatment facilities (RWTF) at its wastewater treatment plant (WWTP). To maximize the beneficial use of recycled water, DSRSD and East Bay Municipal Utility District formed a joint powers authority, DSRSD-EBMUD Recycled Water Authority (DERWA), in 1995. DERWA operates the recycled water transmission system that supplies recycled water from DSRSD’s RWTF to portions of DSRSD’s and EBMUD’s service areas. DSRSD’s recycled water program is discussed in detail in Section 4.5.

In DSRSD’s RWTF, a portion of the secondary effluent from the WWTP is treated further to produce Title 22 disinfected tertiary recycled water. The RWTF can produce up to 12.7 mgd of recycled water during peak demands.

DSRSD expects to increase DERWA deliveries as recycled water demands in its service area and EBMUD’s service area increase. In Table ES-5, historical, current, and projected volume of wastewater collected and treated at DSRSD’s WWTP and RWTF are shown. The total wastewater volume collected and treated at the WWTP includes wastewater from both DSRSD’s service area and the City of Pleasanton, which DSRSD treats by contract. The total volume of recycled water produced includes recycled water for DERWA deliveries to both DSRSD and EBMUD. Wastewater from DSRSD’s service area is identified, along with recycled water deliveries to DSRSD’s water service area. Wastewater that is not recycled is discharged into the San Francisco Bay through a pipeline owned by the Livermore-Amador Valley Water Management Agency (LAVWMA), a joint powers agency created in 1974 by DSRSD and the Cities of Livermore and Pleasanton.

Currently, recycled water use in DSRSD’s service area is primarily for landscape irrigation for a golf course, commercial areas, multi-family residential areas, streetscapes, parks, and schools. Approximately 76 percent of the of recycled water delivered in DSRSD’s service area was used for landscape irrigation and incidental commercial uses, which include

Table ES-5. Volumes of Wastewater Collected & Treated and Recycled Water Treated (AFA)							
Type of Water	2005*	2010*	2015	2020	2025	2030	2035
Wastewater Treated in DSRSD's WWTP (DSRSD and Pleasanton)	13,576	16,309	18,807	20,633	21,664	22,112	22,336
Volume Treated per Title 22 Disinfected Tertiary Recycled Water (DERWA Deliveries and WWTP Internal Use)	908	2,977	4,567	6,783	7,353	7,465	7,577
Wastewater Collected & Treated in DSRSD Service Area Only	6,239	7,292	7,875	10,204	11,370	11,885	11,913
Volume Disinfected Tertiary Recycled Water Distributed in DSRSD Service Area	888	1,729	2,481	3,735	4,305	4,417	4,529
<i>*Actual</i>							

garbage can cleaning and toilet flushing. Approximately 21 percent of DSRSD's recycled water is used at its WWTP for landscape irrigation and make-up water at its facultative sludge lagoons. Approximately two percent of recycled water was used for construction, for grading, dust control, and sewer flushing. Potential future uses are similar to current uses and DSRSD anticipates increased demand for most of those uses.

DSRSD has been aggressive in encouraging and requiring the use of recycled water. When DSRSD recodified its code in November 2010, it added Section 3.20.110, Duty to connect—Recycled water. This section requires new development to use recycled water for irrigation except under specific conditions. Compliance is required if an applicant is to receive potable water service from DSRSD. DSRSD also provides financial incentives for using recycled water: developers do not pay Zone 7 water connection fees for their connections to DSRSD's recycled water system, and recycled water rates are 11 percent less than potable water rates. Details of these incentives are discussed in Section 4.5.7.

ES.7 Water Supply Reliability

Water supply reliability is discussed in detail in Section 5.1. Maximizing water supply resources and minimizing dependence on imported water are important strategic goals. DSRSD's potable water supply comes solely from Zone 7, which depends on imported

surface water for over 80 percent of its supply. To minimize demand for this imported water, DSRSD has implemented the demand management measures discussed in Section 6 and plans to maintain its efforts, including expanding use of recycled water.

Potable Water Reliability

In August 2004, Zone 7 adopted a reliability policy for its water retailers, including DSRSD, which guides the management of Zone 7's municipal and industrial water supplies as well as its capital improvement program (CIP). Under that policy, Zone 7's goal is to meet 100 percent of the water retailers' demands over the next 20 years through average, single dry, and multiple dry years. During the preparation of its 2010 UWMP, Zone 7 was also working on its *Water Supply Evaluation* (WSE) and expects to complete the update in mid-2011. Zone 7 is reviewing the applicability of its reliability policy as part of that effort.⁴

Results of Zone 7's water supply reliability analysis are discussed in Section 5.1.2.3. Zone 7 compared projected water supplies during normal water years, a single dry year, and events involving multiple dry water years. It used demand scenarios without potential water conservation associated with the Water Conservation Act of 2009 ("high water demand") and with potential water conservation ("low water demand"). Zone 7 does not anticipate shortages with implementation of planned programs and projects proposed in its pending *2011 Water Supply Evaluation*. However, it anticipates shortages between 2020 and 2030 based on the High Water Demand scenario during normal years if it is unable to implement planned programs and projects.

During the preparation of this UWMP, DSRSD revised its projections (submitted to Zone 7 during its preparation of its UWMP) based on current and future water conservation and expanded use of recycled water. Ultimate potable water demand is expected to be 1,300 AFA less than originally projected at buildout in 2030. DSRSD used these revised projections in conducting its own water reliability analysis. DSRSD anticipates that the other water retailers supplied by Zone 7 will also conform to the requirements of the Water Conservation Act of 2009. In analyzing the reliability of DSRSD's potable water supply, DSRSD calculated the percentage of possible water shortage if Zone 7's planned programs and projects are implemented and if they are not implemented. All of Zone 7's customers, including the water retailers in the Livermore-Amador Valley, are assumed to proportionally share the impacts of the shortages. DSRSD's potable water supply reliability for normal years, a single dry year, and multiple dry years are shown on Tables ES-6, ES-7, and ES-8, respectively.

The results of the analyses are as follows. With Zone 7's planned programs and projects implemented, DSRSD anticipates no water supply shortage. If Zone 7's planned programs and projects are not implemented, DSRSD anticipates:

- approximately 3 percent water supply shortage starting 2030 during normal years;
- approximately 1 percent water supply shortage starting 2035 during a single dry year;

4. Zone 7 Water Agency, *2010 Urban Water Management Plan*, Section 7.1, p. 7-1. WSE was formerly called "Water System Master Plan."

- for a multiple dry years event that starts in 2025, DSRSD will receive 72 percent of its total potable water demand (28 percent water shortage) in the third year;
- for a multiple dry years event that starts in 2030, DSRSD will receive 98 percent of its total potable water demand (2 percent water shortage) in the first year, and 69 percent of its total potable water demand (31 percent water shortage) in the third year;
- for a multiple dry years event that starts in 2035, DSRSD will receive 98 percent of its total potable water demand (2 percent water shortage) in the first year, and 69 percent of its total potable water demand (31 percent water shortage) in the third year.

If these shortages occur, DSRSD may have to invoke its *Water Shortage Contingency and Drought Plan*, described in Section 5.3.

Recycled Water

Reliability of DSRSD's recycled water supply in normal years, a single dry year, and multiple dry years is also shown on Tables ES-6, ES-7, and ES-8. DSRSD does not anticipate significant challenges in its ability to provide recycled water to its customers. DSRSD's recycled water supply is 100% reliable.



Dublin Ranch Golf Course is irrigated with recycled water.

Table ES-6. DSRSD Water Supply and Demand Comparison — Normal Year (AFA)					
	2015	2020	2025	2030	2035
POTABLE WATER					
Zone 7 Planned Projects & Programs Implemented					
Zone 7 Water Supply Totals ¹	12,900	16,000	17,500	18,300	18,500
DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
Difference	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%
Zone 7 Planned Projects & Programs Not Implemented					
Zone 7 Water Supply Totals ^{1,2}	12,900	16,000	17,500	17,711	17,857
DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
Difference	0	0	0	-589	-643
Difference as % of Supply	0%	0%	0%	-3.32%	-3.60%
Difference as % of Demand	0%	0%	0%	-3.22%	-3.48%
RECYCLED WATER					
DSRSD Supply Totals ³	2,500	3,800	4,400	4,500	4,600
DSRSD Demand Totals	2,500	3,800	4,400	4,500	4,600
Difference	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%
¹ Includes DSRSD's 645 acre-ft/year GPQ pumped by Zone 7 and blended with Zone 7's other water supply sources. Rounded up to the nearest 100 acre-ft.					
² Assumes that water supply shortage is shared equally amongst water retailers supplied by Zone 7. See Appendix O for determination of shortages.					
³ Recycled Water from DSRSD's RWTF.					

Table ES-7. DSRSD Water Supply and Demand Comparison — Single Dry Year (AFA)					
	2015	2020	2025	2030	2035
POTABLE WATER					
Zone 7 Planned Projects & Programs Implemented					
Zone 7 Water Supply Totals ¹	12,900	16,000	17,500	18,300	18,500
DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
Difference	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%
Zone 7 Planned Projects & Programs Not Implemented					
Zone 7 Water Supply Totals ²	12,900	16,000	17,500	18,128	18,326
DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
Difference	0	0	0	-172	-174
Difference as % of Supply	0%	0%	0%	-1%	-0.95%
Difference as % of Demand	0%	0%	0%	-1%	-0.94%
RECYCLED WATER					
DSRSD Supply Totals ³	2,500	3,800	4,400	4,500	4,600
DSRSD Demand Totals	2,500	3,800	4,400	4,500	4,600
Difference	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%
¹ Includes DSRSD's 645 acre-ft/year GPQ pumped by Zone 7 and blended with Zone 7's other water supply sources. Rounded up to the nearest 100 acre-ft.					
² Assumes that water supply shortage is shared equally amongst water retailers supplied by Zone 7. See Appendix O for determination of shortages.					
³ Recycled Water from DSRSD's RWTF.					

Table ES-8. DSRSD Supply and Demand Comparison — Multiple Dry Years Events (AFA)						
	2015	2020	2025	2030	2035	
POTABLE WATER						
Zone 7 Planned Projects & Programs Implemented						
Multiple dry year first year supply	Zone 7 Water Supply Totals ¹	12,900	16,000	17,500	18,300	18,500
	DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple dry year second year supply	Zone 7 Water Supply Totals ¹	13,500	16,300	17,700	18,300	18,500
	DSRSD Demand Totals	13,500	16,300	17,700	18,300	18,500
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple dry year third year supply	Zone 7 Water Supply Totals ¹	14,800	16,900	18,000	18,400	18,500
	DSRSD Demand Totals	14,800	16,900	18,000	18,400	18,500
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Zone 7 Planned Projects & Programs Not Implemented						
Multiple dry year first year supply	Zone 7 Water Supply Totals ^{1,2}	12,900	16,000	17,500	17,994	18,133
	DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
	Difference	0	0	0	-306	-367
	Difference as % of Supply	0%	0%	0%	-1.70%	-2.02%
	Difference as % of Demand	0%	0%	0%	-1.67%	-1.98%
Multiple dry year second year supply	Zone 7 Water Supply Totals ^{1,2}	13,500	16,300	17,700	18,300	18,500
	DSRSD Demand Totals	13,500	16,300	17,700	18,300	18,500
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple dry year third year supply	Zone 7 Water Supply Totals ^{1,2}	14,800	16,900	12,880	12,620	12,676
	DSRSD Demand Totals	14,800	16,900	18,000	18,400	18,500
	Difference	0	0	-5,120	-5,780	-5,824
	Difference as % of Supply	0%	0%	-39.8%	-45.8%	-45.9%
	Difference as % of Demand	0%	0%	-28.4%	-31.4%	-31.5%
RECYCLED WATER						
Multiple dry year first year supply	DSRSD Supply Totals ³	2,500	3,800	4,400	4,500	4,600
	DSRSD Demand Totals	2,500	3,800	4,400	4,500	4,600
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple dry year second year supply	DSRSD Supply Totals ³	2,800	3,900	4,400	4,500	4,600
	DSRSD Demand Totals	2,800	3,900	4,400	4,500	4,600
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple dry year third year supply	DSRSD Supply Totals ³	3,300	4,200	4,500	4,600	4,600
	DSRSD Demand Totals	3,300	4,200	4,500	4,600	4,600
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%

¹ Includes DSRSD's 645 acre-ft/year GPQ pumped by Zone 7 and blended with Zone 7's other water supply sources. Rounded up to the nearest 100 acre-ft.

² Assumes that water supply shortage is shared equally amongst water retailers supplied by Zone 7. See Appendix O for determination of shortages.

³ Recycled Water from DSRSD's RWTF.

Water Quality Impacts on Reliability

The impacts of water quality on the reliability of potable water and recycled water supplies are discussed in detail in Section 5.2. Overall, DSRSD's water supply reliability is not significantly impacted by water quality issues.

ES.8 Water Shortage Contingency and Drought Plan

DSRSD's *Water Shortage Contingency and Drought Plan* is presented in Section 5.3. This plan addresses situations when catastrophic water supply interruptions occur, due to regional power outage, earthquake, or other disasters; and when drought occurs due to environmental, climatic, or legal issues. This plan is being adopted concurrently with the adoption of DSRSD's 2010 UWMP. The plan is based on DSRSD's Ordinance No. 323, its *Emergency Response Plan* (ERP), and DSRSD Code Section 4.10.030(C). It includes four stages of water conservation, summarized in Table ES-9, which can be implemented depending on the severity of conditions. The plan does not provide numeric targets for triggering a shortage

Table ES-9. Stages to Address Water Supply Shortages		
Stage No.	Water Supply Conditions¹	% Shortage²
1	Identifiable events lead to a reasonable probability that in the next few years, DSRSD potable water supplies will not be adequate to meet the normal water demands and requirements of DSRSD's water customers and users.	5% or greater
2	Identifiable events lead to a reasonable probability that in the current or upcoming year, DSRSD potable water supplies will not be adequate to meet the normal water demands and requirements of DSRSD's water customers and users.	15% or greater
3	Identifiable events lead to a reasonable conclusion that in the current year, DSRSD potable water supplies will not be adequate to meet the normal water demands and requirements of DSRSD's water customers and users.	30% or greater
4	Stage 3 water shortage provisions have been in effect and water use reduction have not been achieved to maintain adequate water supply for health and safety, or when new events require greater water conservation.	50% or greater
¹ Stages as defined in DSRSD Ordinance 323.		
² In accordance with ERP Action Plan 9 - Water Supply Interruption. To be followed only during emergency		

stage, nor specific reduction percentages, except in emergency situations. The intent is to maintain some degree of flexibility for DSRSD to respond to water supply shortages. Numeric minimum targets provide a guideline for quick decision-making only during emergencies.

During non-emergency times, the DSRSD Board of Directors may determine that a water shortage exists and consider a resolution to declare a water shortage condition and associated stage for water conservation. During times of emergency, the DSRSD General Manager is authorized to declare a water emergency and implement the provisions in the *Emergency Response Plan* (ERP), including appropriate action plans to address imminent water supply shortages.⁵ When an imminent water supply interruption occurs, the DSRSD General Manager may declare the necessary stage for water conservation.

Stage 1 water conservation is voluntary, whereas Stage 2 may be voluntary or mandatory as declared by the DSRSD Board of Directors. Stages 3 and 4 are mandatory. Water consumption measures and prohibitions accompany each stage and are discussed in detail in Section 5.3.1. When mandatory water use reduction is declared at any of the above stages, the DSRSD Board of Directors will adopt a progressive schedule of fines to be levied against customers and users for successive violations of water use restrictions established in Stages 3 and 4. The DSRSD General Manager is authorized to apply penalties as he or she deems appropriate, including restricting flow, submetering, and discontinuing water service, until the violation is corrected. DSRSD may also seek damages and/or remedies, including fees or fines and the amount of costs incurred by DSRSD to investigate and correct the violation.

To ensure that DSRSD water conservation operating expenses are covered during any water shortage conditions, the DSRSD Board of Directors has established water rates for each stage of water shortage condition in accordance with DSRSD Ordinance 323. The water rate is effective the date that the stage is declared and applicable for the duration of the stage. DSRSD may also incur costs in enforcing mandatory water use reduction measures.

ES.9 Demand Management Measures

DSRSD has been a member of the California Urban Water Conservation Council (CUWCC) since 1991 and is an original signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California (CUWCC MOU). DSRSD has been implementing various Best Management Practices (BMPs) for water conservation since 1991, and has been submitting biennial reports to the CUWCC since 1992. Copies of DSRSD's Best Management Report Filings to CUWCC for 2005/06, 2007/08, and 2009/10 are provided in Appendix T.

5. DSRSD Ord. 323.

DSRSD's water conservation program includes the demand management measures (DMMs) detailed in Section 6. Its current conservation efforts and rates were established to address varying hydrological conditions (droughts) that occur from year to year. Because customers modified their water consumption behavior when the DSRSD Board of Directors declared Stage 1 water shortage conditions in 2009, DSRSD currently meets and exceeds the 2020 urban water use target of 163 GPCD. If DSRSD were to back off its request for water conservation at this time, consumption may rebound. Accordingly, DSRSD plans to maintain the current level of conservation as the foundation of a comprehensive water conservation program. It will build on that foundation by investigating and implementing, as appropriate, permanent demand reduction programs that are shown to be effective and affordable



Monthly water consumption updates are posted on the District's website.



Introduction

Purpose

This *2010 Urban Water Management Plan* (2010 UWMP) has been prepared in accordance with the California Urban Water Management Planning Act (UWMP Act), California Water Code Division 6, Part 2.6 Urban Water Management Planning, Sections 10610 through 10650. The UWMP Act requires every urban water supplier in California that provides water for municipal purposes, either directly or indirectly to more than 3,000 customers or by supplying more than 3,000 acre-feet of water annually, to prepare and adopt an Urban Water Management Plan (UWMP). The agency must update the adopted UWMP at least once every five years on or before December 31 in years ending in five and zero. An urban water supplier that does not prepare, adopt, and submit its UWMP to the California Department of Water Resources (DWR) is ineligible to receive drought assistance from the State of California. The 2010 UWMP must be adopted by July 1, 2011.

The UWMP Act requires urban water suppliers to report, describe, and evaluate water deliveries and uses, water supply sources, efficient water uses, and demand management measures (DMMs), including implementation strategy and schedule. In carrying out their long-term resource planning responsibilities, urban water suppliers must demonstrate that adequate water supplies are available to meet existing and future demands.⁶ Urban water suppliers are required to assess current demands and supplies over a 20-year planning horizon and consider various drought scenarios. The UWMP Act also directs suppliers to address water shortage contingency planning and drought response actions in their plans.

In addition, the Water Conservation Act of 2009 (SBx7_7) requires urban water suppliers to report in their UWMPs base daily per capita water use (baseline), urban water use target, interim urban water use target, and compliance daily per capita water use.

In 2010, Dublin San Ramon Services District (DSRSD, District) supplied 8,801 acre-feet (AF) of potable water and 1,729 AF of recycled water to approximately 17,955 customers⁷ in the City of Dublin in Alameda County, California, and the Dougherty Valley area of San Ramon, in Contra Costa County, California, and is therefore subject to the requirements of the UWMP Act and the Water Conservation Act of 2009. DSRSD prepared its first UWMP

6. Water Code, Section 10612 (b).

7. DSRSD Engineering Department, number of DSRSD potable and recycled water meters as of December 31, 2010.

in 1996 and updated it in 2000 and 2005. Prior to 1996, DSRSD participated in a regional plan prepared by Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7 Water Agency, Zone 7).

Additionally, DSRSD has applied for the California Department of Water Resources (DWR) Proposition 84 Round 1 Implementation Grant as part of the San Francisco Bay Area Integrated Regional Water Management Plan. Completion of this 2010 UWMP is a condition of receiving a grant award.

This UWMP was prepared in conformance with the UWMP Act as updated, Senate Bill (SB) 610 Water Supply Assessments and SB 221 Written Verifications of Water Supply, Assembly Bill (AB) 1420 (implementation of the Water Conservation Act of Water Demand Management Measures), and SBx7_7, the Water Conservation Act of 2009.

This 2010 UWMP updates and supersedes all previous UWMPs prepared by DSRSD. This UWMP addresses water demand, water supply, and water resource management for the DSRSD service area. Details in this UWMP have been incorporated in the *2010 UWMP of Zone 7 Water Agency*, the District's water wholesaler. Zone 7's Board of Directors adopted its 2010 UWMP on December 15, 2010.

Plan Contents and Organization

The UWMP Act was established in 1983 by Assembly Bill 797 and amended numerous times since then. This 2010 UWMP incorporates relevant legislation enacted between 2005 and 2010, including Senate Bill No. 7 (SBx7_7), the Water Conservation Act of 2009; and Senate Bill 1087 (SB 1087), related to providing water supply to lower income households. The latest version of the UWMP Act is provided in Appendix A and a copy of SBx7_7, hereafter called the Water Conservation Act of 2009, is included as Appendix B. This updated UWMP for DSRSD has been prepared in accordance with those requirements and contains information on the following:

- Plan development and public participation;
- DSRSD's service area and population;
- Available water supply sources and associated reliability;
- Past, present and projected water demands;
- DSRSD water demand reduction in accordance with SBx7_7;
- DSRSD water demand management measures;
- DSRSD water shortage contingency plan; and
- Potential for use of recycled water within DSRSD's service area.

This UWMP was prepared according to the DWR *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan (March 2011)* (Guidebook). The organization of this UWMP generally follows the Guidebook. The Guidebook recommends the inclusion of a number of tables. The location of the DWR recommended tables are listed in Table 0-1. The Guidebook includes an optional section on climate change. At this time, DSRSD opted not to include a section on climate change.

Table 0-1. Location of DWR Recommended Tables			
DWR Table Number and Title		2010 UWMP Section and Table Number	
Table 1.	Coordination with Appropriate Agencies	Section 1	Table 1-1
Table 2.	Population—Current and Projected	Section 2	Table 2-2
Table 3.	Water Deliveries—Actual, 2005	Section 3	Table 3-5
Table 4.	Water Deliveries—Actual, 2010	Section 3	Table 3-5
Table 5.	Water Deliveries—Projected, 2015	Section 3	Table 3-5
Table 6.	Water Deliveries—Projected, 2020	Section 3	Table 3-5
Table 7.	Water Deliveries—Projected, 2025, 2030 and 2035	Section 3	Table 3-5
Table 8.	Low-Income Projected Water Demands	Section 3	Table 3-6
Table 9.	Sales to Other Water Agencies	Section 3	Table 3-7
Table 10.	Additional Water Uses and Losses	Section 3	Table 3-8
Table 11.	Total Water Use	Section 3	Table 3-9
Table 12.	Retail Agency Demand Projections Provided to Wholesale Suppliers	Section 3	Table 3-11
Table 13.	Base Period Ranges	Section 3	Table 3-1
Table 14.	Base Daily Per Capita Water Use—10- to 15-Year Range	Section 3	Table 3-2
Table 15.	Base Daily Per Capita Water Use—5-Year Range	Section 3	Table 3-3
Table 16.	Water Supplies—Current and Projected	Section 4	Table 4-1
Table 17.	Wholesale Supplies—Existing and Planned Sources of Water	Section 4	Table 4-2
Table 18.	Groundwater—Volume Pumped	Section 4	Table 4-4
Table 19.	Groundwater—Volume Projected to be Pumped	Section 4	Table 4-5
Table 20.	Transfer and Exchange Opportunities	Section 4	Table 4-6

Table 0-1. Location of DWR Recommended Tables			
DWR Table Number and Title		2010 UWMP Section and Table Number	
Table 21.	Recycled Water—Wastewater Collection and Treatment	Section 4	Table 4-7
Table 22.	Recycled Water—Non-Recycled Wastewater Disposal	Section 4	Table 4-8
Table 23.	Recycled Water—Potential Future Use	Section 4	Table 4-11
Table 24.	Recycled Water—2005 UWMP Use Projection Compared to 2010 Actual	Section 4	Table 4-10
Table 25.	Methods to Encourage Recycled Water Use	Section 4	Table 4-13
Table 26.	Future Water Supply Projects	Section 4	Table 4-14
Table 27.	Basis of Water Year Data	Section 5	Table 5-2
Table 28.	Supply Reliability—Historic Conditions	Section 5	Table 5-3
Table 29.	Factors Resulting in Inconsistency of Supply	Section 5	Table 5-1
Table 30.	Water Quality—Current and Projected Water Supply Impacts	Section 5	Table 5-8
Table 31.	Supply Reliability—Current Water Sources	Section 5	Table 5-13
Table 32.	Supply and Demand Comparison—Normal Year	Section 5	Table 5-5
Table 33.	Supply and Demand Comparison—Single Dry Year	Section 5	Table 5-6
Table 34.	Supply and Demand Comparison—Multiple Dry Year Events	Section 5	Table 5-2
Table 35.	Water Shortage Contingency—Rationing Stages to Address Water Supply Shortages	Section 5	Table 5-9
Table 36.	Water Shortage Contingency—Mandatory Prohibitions	Section 5	Table 5-10
Table 37.	Water Shortage Contingency—Consumption Reduction Methods	Section 5	Table 5-11
Table 38.	Water Shortage Contingency—Penalties and Charges	Section 5	Table 5-12

Glossary of Terms and Acronyms

The following terms and acronyms are used throughout this UWMP 2010 to improve document clarity and readability.

ADWF	Average dry weather flow
AF	Acre-feet
AFA	Acre-feet per year
BBID	Byron Bethany Irrigation District
BMPs	Best Management Practices
CEQA	California Environmental Quality Act
CCCSD	Contra Costa County Sanitary District
CCF	100 cubic feet
Chain of Lakes	A series of gravel quarry pits to be abandoned in the future and converted into nine lakes (Lakes A through I) linked in series and used by Zone 7 for seasonal water storage and conveyance
CIMIS	California Irrigation Management Information System
CUWCC	California Urban Water Conservation Council
CWS	California Water Service Company
DERWA	DSRSD/EBMUD Recycled Water Authority
DPH	California Department of Public Health
DMMs	Demand Management Measures; 14 water conservation measures included in the UWMP Act
DSRSD	Dublin San Ramon Services District
DWR	California Department of Water Resources
Eastern Dublin Final WSA	<i>Final Revised Water Service Analysis for Eastern Dublin</i> ; completed in December 2001 in response to the November 2, 1999 “Agreement to Settle Water Litigation By and Between Zone 7 Water Agency, Dublin San Ramon Services District, et.al.”
EBDA	East Bay Dischargers Authority
EBMUD	East Bay Municipal Utility District
ETo	Evapotranspiration, the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues); the “o” designates grass as the reference crop

FCI	Federal Correctional Institution, Dublin
GPCD	Gallons per capita per day
GPQ	Groundwater pumping quota; refers to groundwater pumping quota for each of the Tri-Valley's water retailers, including DSRSD. This is the quantity of water that DSRSD is entitled to extract from the Main Basin without paying a recharge fee to Zone 7.
KCWA	Kern County Water Agency
LAVWMA	Livermore Amador Valley Water Management Agency
Lost Water	Water which is lost in the system and not billed. Apparent losses are usually associated with metering inaccuracies and unauthorized consumption. Real losses are usually associated with leaks in the distribution system, including mains, tanks and service connections.
M&I	Municipal and Industrial
Main Basin	The main portion of the Livermore Valley Groundwater Basin, located essentially within the valley floor sections of the Castle, Bernal, Amador and Mocho II Sub-basins (as defined in DWR Bulletin 118), from which Zone 7 and retailer groundwater supplies are pumped
MCLs	Maximum Contaminant Levels
MCLGs	Maximum Contaminant Level Goals
MFUV	Microfiltration Ultraviolet Disinfection
Mgd	Million gallons per day
MOU	Memorandum of Understanding
MWD	Metropolitan Water District
Natural Yield	The yield of the groundwater basin as a result of natural inflow and recharge; does not include artificial recharge
PHGs	Public Health Goals
Pumpback	A term used to define the quantity of water which can be "withdrawn" from non-local storage (i.e., Semitropic Water Storage District)
RWTF	Recycled Water Treatment Facilities; includes MFUV and SFUV facilities
SFTF	Sand Filtration Treatment Facility
SFUV	Sand Filtration Ultraviolet Disinfection
SRVRWP	San Ramon Valley Recycled Water Program
STWSD	Semitropic Water Storage District
SWP	State Water Project
SWRCB	State Water Resources Control Board
UWMP	Urban Water Management Plan

UWMP Act	Urban Water Management Planning Act; enacted in 1983; establishes requirements for a UWMP
WYA	West Yost Associates
Zone 7	Zone 7 of the Alameda County Flood Control and Water Conservation District; water wholesaler to DSRSD

Contact

This 2010 UWMP was prepared by the Engineering Department of DSRSD and West Yost Associates (WYA). Questions or comments should be submitted in writing to:

Dublin San Ramon Services District
Attn: Rhodora N. Biagtan
7051 Dublin Boulevard
Dublin, CA 94568
FAX: (925) 875-2255
E-mail: UWMP2010@dsrsd.com



Plan Preparation, Coordination and Adoption

This section includes specific information on how DSRSD's 2010 UWMP was prepared, coordinated with other agencies and the public, and adopted.

1.1 Plan Preparation

DSRSD staff began preparing this 2010 UWMP in September 2009, with assistance from West Yost Associates (WYA). The information contained herein is based on data obtained from DSRSD documentation and databases and Zone 7 water supply planning documents, and by reviewing and updating data contained in DSRSD's 2005 UWMP. The general plans, specific plans, and housing elements of the cities and counties within the DSRSD service area were also used to prepare this UWMP.

1.2 Plan Coordination

Water Code Section 10620(d)

Coordination activities with relevant agencies, parties, and the general public are summarized in Table 1 below.

1.2.1 Coordination with Other Agencies

Water Code Section 10621(b)

DSRSD coordinated with Zone 7 (the region's water wholesaler) and the City of Pleasanton, the City of Livermore, and California Water Service Company-Livermore District (the region's other water retailers) to compile a complete assessment of the region's available water supply and projected water demands. DSRSD actively participated in Zone 7's preparation of its 2010 UWMP. Along with the region's other water retailers, DSRSD provided necessary information on population and water demand projections, wastewater management, water conservation plans, and recycled water plans. DSRSD also commented on Zone 7's water supply planning. In exchange, Zone 7 provided assistance to DSRSD in the preparation of this UWMP. The results of Zone 7's regional analysis have been

incorporated in Sections 3, 4, and 5 of this 2010 UWMP. Zone 7 adopted its 2010 UWMP at its December 15, 2010 Board of Directors meeting.

Additionally, DSRSD coordinates continuously with Zone 7, the City of Dublin, City of San Ramon, Alameda County, and Contra Costa County to ensure that a safe and reliable water supply is delivered to existing customers and that plans for serving future customers are implemented as efficiently as possible. To ensure that these agencies were informed on the current and future water supply issues facing DSRSD, copies of the Draft 2010 UWMP were provided to Zone 7, City of Dublin, City of San Ramon, Alameda County, Contra Costa County, and the region's other water retailers—City of Pleasanton, the City of Livermore, and California Water Service Company-Livermore District—for their review and comment prior to adoption. DSRSD's coordination activities with agencies, other stakeholders, and the general public are summarized in Table 1-1.

1.2.2 Public Participation

Water Code Section 10642

DSRSD encourages public participation in its planning processes and sought public input while developing this updated UWMP. A notice of preparation was posted on DSRSD's web site (www.dsrdsd.com) on March 14, 2011. DSRSD also printed a message on its water bills distributed between April 15 and June 1, 2011, encouraging customers to visit DSRSD's website regarding preparation of this UWMP.

Once the 2010 UWMP was available for public review, a notice of availability, public hearing, and adoption was posted on DSRSD's web site and at the DSRSD office on April 28, 2011. This notice was posted twice in local newspaper (*Valley Times*), one week apart—on May 2 and May 9, 2011.

1.2.3 Notification

Water Code Section 10642

DSRSD provided notices for the preparation, public review, and public hearing and adoption of this UWMP to the agencies mentioned in 1.2.1 above by regular mail and e-mail, as well as to the general public as described above. The notices and of the dates they were issued are listed below. Copies of the notices issued by DSRSD are listed below and included in Appendix C.

<u>Type of Notice</u>	<u>Date Issued</u>
Notice of Preparation	February 1, 2011
First Notice of Availability, Public Hearing and Adoption	May 2, 2011
Second Notice of Availability, Public Hearing and Adoption	May 9, 2011

Table 1.1 Coordination With Appropriate Agencies (DWR Table 1)							
Coordinating Agencies	Participated in developing plan	Commented on draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt	Not involved/ No information
Zone 7 Water Agency	X	X		X	X	X	
City of Dublin	X	X		X	X	X	
City of San Ramon	X			X	X	X	
City of Pleasanton					X	X	
City of Livermore					X	X	
California Water Service Company, Livermore District					X	X	
DSRSD/EBMUD Recycled Water Authority	X			X	X	X	
East Bay Municipal Utilities District					X	X	
Alameda County				X	X	X	
Contra Costa County	X			X	X	X	
Camp Parks Reserve Forces Training Area					X	X	
Federal Bureau of Prisons					X	X	
Others							
Citizens for Balanced Growth					X	X	
Windemere BLC					X	X	
Shapell Industries					X	X	
General Public						X	

1.2.4 Availability

Water Code Section 10645

The Draft 2010 UWMP was available for public review from May 2 to May 20. A public hearing was held on Tuesday, May 17, 2011 at a regularly scheduled DSRSD Board of Directors meeting. During this review period, the Draft UWMP was available at DSRSD's web site, at DSRSD's office during normal business hours, distributed to interested parties, and made available at the City of Dublin and City of San Ramon public libraries. A Notice of Availability, Public Hearing, and Adoption was posted twice in local newspaper (*Valley Times*), on May 2 and May 9, 2011. Additionally, a notice was posted on DSRSD's web site and at its main office.

Within 30 days of adoption, DSRSD will have a copy of the adopted plan available in its library, located at the DSRSD main office.

1.3 Plan Adoption and Submittal

Water Code Sections 10635(B), 10642, 10644(a), 10645

The DSRSD Board of Directors will adopt this updated UWMP on June 7, 2011 (see DSRSD Resolution in Appendix D). DSRSD will submit paper copies of this 2010 UWMP to the Department of Water Resources (DWR) and the California State Library within 30 days after its adoption, as required by Section 10644 of the UWMP Act. DSRSD will also submit this UWMP to DWR electronically through the DWR Online Submittal Tool (DOST).

Following plan adoption, DSRSD will provide copies to Zone 7 and the cities and counties where DSRSD provides water service, including the City of Dublin, City of San Ramon, Alameda County, and Contra Costa County, in accordance with the requirements of the UWMP Act.

1.4 Implementation

Water Code Section 10643

DSRSD has long been committed to reducing the demand for potable water through water conservation and water recycling activities. DSRSD has been a member of the California Urban Water Conservation Council (CUWCC) since 1991. It has pursued the development of a recycled water use program since the early 1990's. When DSRSD developed its Strategic Plan in 2008, managing water supply and recycled water resources were included as two important components. The Strategic Plan is updated annually and includes goals and

tasks associated with the completion of this UWMP and compliance with the Water Conservation Act of 2009.

DSRSD has been implementing the Demand Management Measures (DMMs) outlined in the UWMP Act and has successfully reduced potable water demand by over 20 percent per account within its service area since 2007. This water use reduction has been the result of an aggressive water conservation program with public outreach and extensive education programs and voluntary water use reductions by DSRSD's customers. DSRSD has also been aggressive in expanding its recycled water program. Although the recent drought conditions have ended, the need for ongoing water conservation continues.

As discussed in Section 2.3, the population of DSRSD's service area is expected to increase by 50 percent between 2010 and 2030 due to planned development. It will be a challenge to maintain an adequate and reliable water supply to meet existing and future demand due to uncertainties in water supplies conveyed through the San Joaquin Delta (a primary source of Zone 7's water supply). Additionally, DSRSD is committed to complying with the requirements of AB 1420, SB 1087, and the Water Conservation Act of 2009. Compliance with these legislative requirements will not only conserve valuable water resources, but will keep DSRSD eligible for State grants that can be used to fund new programs.

As discussed in Section 3.4, DSRSD customers have already met and surpassed the District's 2020 urban water use target. However, it is uncertain whether they will sustain this current level of conservation. DSRSD plans to continue implementing water conservation programs and the DMMs described in Section 6, as well as monitoring their effectiveness. The District views the current level of conservation as the foundation of a comprehensive water conservation program. If its customers deviate from the target, DSRSD plans to implement demand reduction programs in its portfolio, based on affordability and certainty of water savings.

In addition, as described in Section 4.5, DSRSD will continue to actively promote water recycling. DSRSD has constructed extensive recycled water treatment, storage, and distribution facilities and currently delivers recycled water to irrigate sports fields, golf courses, schools, parks, and other landscaping at numerous sites in the City of Dublin and Dougherty Valley. Installation of recycled water pipelines is required as new areas are developed and DSRSD will expand its recycled water facilities to serve these increasing demands. Using more recycled water offsets the need to develop new supplies of potable water and reduces peak water use without limiting the amount of potable water available.



Background and System Description

The DSRSD water system is described in this section. Descriptions of DSRSD's service area, climate, population, and demographics are included. Descriptions of the DSRSD physical system (transmission, treatment, and distribution facilities) to support the Water Conservation Act of 2009 requirements, discussions of changes to the water system from 1995 to 2010, DSRSD's organizational structure, and other issues that affect the DSRSD water system are included.

2.1 DSRSD History

DSRSD was formed in 1953 under the Community Services District Act, Government Code Sections 61000-61802, and was originally known as the Parks Community Services District. The name was changed to Valley Community Services District in 1963. The initial water system was constructed by the Volk-McClain Company, which drilled wells for DSRSD along Dublin Boulevard. DSRSD originally supplied water to San Ramon until East Bay Municipal Utility District (EBMUD) took over water service in 1967.

As the need for additional sources of water became apparent, DSRSD first entered into an agreement with Zone 7 in 1963 to acquire additional treated water supplies. DSRSD's most recent contract with Zone 7 went into effect on August 23, 1994 and has a 30-year term (until 2024). A copy of the DSRSD/Zone 7 water supply contract is provided in Appendix E. Discussion of the terms of the supply contract is provided in Section 4 of this UWMP. Other water retailers served by Zone 7 include the California Water Service Company (Livermore District), the City of Livermore, and the City of Pleasanton.

Commercial and residential growth in the region since 1963 has required continuous increases in the capacity of Zone 7's treatment, pumping, storage, and distribution facilities, along with the expansion of DSRSD's water service area and water distribution system. Additional growth is anticipated in the region. DSRSD, in cooperation with Zone 7, has acquired additional water supplies to provide for this growth. These supplies include additional water from Zone 7 (including a water entitlement transfer for Dougherty Valley), groundwater, and recycled water. Current and projected water supplies are described in greater detail in Section 4 of this UWMP.

To reduce the demand for potable water, DSRSD has committed to participate in water conservation and recycling activities. DSRSD became a member of the California Urban Water Conservation Council (CUWCC) when its Board of Directors officially adopted the

Memorandum of Understanding Regarding Urban Water Conservation in California on September 7, 1991. DSRSD is currently implementing the 14 Best Management Practices (BMPs) outlined in that Memorandum of Understanding, which correspond to the 14 Demand Management Measures (DMMs) outlined in the UWMP Act. Further discussion of these conservation efforts is provided in Section 6 of this UWMP.

In addition to encouraging water conservation, DSRSD promotes water recycling and is a member of the WaterReuse Association. In 1995, DSRSD and EBMUD, through a joint powers agreement, formed the DSRSD-EBMUD Recycled Water Authority (DERWA). DERWA serves as a wholesaler to deliver recycled water to DSRSD and EBMUD, who in turn deliver the recycled water to their respective service areas. DERWA's mission is to provide a safe, reliable, and consistent supply of recycled water and to maximize the amount of recycled water delivered. DERWA's San Ramon Valley Recycled Water Project (SRVRWP) provides a backbone distribution system that delivers recycled water to both DSRSD and EBMUD distribution systems. DSRSD's recycled water treatment facilities delivers recycled water to the SRVRWP. Since 1999, DSRSD has augmented its potable water supply with recycled water for landscape irrigation at numerous sites in the City of Dublin and the Dougherty Valley area. As new areas are developed, DSRSD will expand its recycled water treatment, storage, and distribution facilities to serve these areas. Further discussion of DSRSD's recycled water efforts is provided in Section 4.5 of this UWMP.

2.2 Service Area Physical Description

Water Code Section 10631(a)

2.2.1 Jurisdictional Boundary

DSRSD's service area is located in the East Bay's Livermore-Amador Valley near the Interstate 580/680 interchange. DSRSD provides both potable and recycled water to its customers. As shown on Figure 2-1, DSRSD's current water service area includes the original service area in Dublin as well as approved development in eastern Dublin, western Dublin, and Dougherty Valley in Contra Costa County. The Dougherty Valley area is currently undergoing development; as improvements are completed, subareas are incorporated into the City of San Ramon. DSRSD's water service area also includes the U.S. Army Reserve's Parks Reserve Forces Training Area (Camp Parks), which officially became part of the water system in 1999, the Federal Bureau of Prison's Federal Correctional Institution at Dublin (FCI), and Alameda County's Santa Rita Jail.

In addition to water service, DSRSD provides wastewater collection and treatment services for the City of Dublin, the southern portion of San Ramon, Camp Parks, FCI, and Santa Rita Jail. DSRSD also provides wastewater treatment under contract to the City of Pleasanton. DSRSD owns and operates a wastewater treatment plant in Pleasanton that has a capacity of 17 million gallons per day (mgd).

2.2.2 Physical Description—Water Supply

Zone 7 supplies treated potable water to DSRSD. Until 1980, a portion of DSRSD's water came from DSRSD-owned wells; however, these wells have since been abandoned. Zone 7 currently provides 100 percent of DSRSD's potable water. Treated potable water enters DSRSD's distribution system from five metered turnouts from the Zone 7 transmission system. The locations of these turnouts are shown on Figure 2-1.

The oldest turnout, No. 1, is located at the intersection of Dougherty Road and the abandoned Southern Pacific Railroad right-of-way. Turnout No. 2 was added in 1985, at the same time the Zone 7-owned Dougherty Reservoir was constructed. Turnout No. 2 is located at the intersection of Amador Valley Boulevard and Stagecoach Road. Turnout No. 3 (Camp Parks Turnout) is in the vicinity of the southern end of Arnold Road, and is equipped with a pressure reducing valve which opens only during low pressure emergency events. Turnout No. 4 is the former Santa Rita turnout in eastern Dublin. Turnout No. 5 is located in the vicinity of Freisman Road and El Charro Road, in Livermore.

Turnout Nos. 1, 2, 4, and 5 are equipped with fluoridation facilities, which fluoridate water delivered from Zone 7 prior to entering DSRSD's system. Turnout No. 3 is not equipped with fluoridation facilities as it is only used during emergency events.

Recycled water is produced at DSRSD's wastewater treatment plant at the Recycled Water Treatment Facilities (RWTF). The RWTF produces recycled water that meets the California Title 22 requirements for unrestricted reuse (see Section 4.5 for additional discussion).

2.2.3 Physical Description—Water Distribution

The original DSRSD potable water distribution system in central Dublin consisted of four pressure zones. This system has continued to expand as development construction has occurred in eastern Dublin, western Dublin, and Dougherty Valley. Additional pressure zones with different service elevations have been installed to serve newly developed areas. The entire DSRSD potable water distribution system currently contains approximately 277.5 miles of potable water pipelines. The expansion of DSRSD's major potable water infrastructure expansion from 1995 to present is illustrated in five-year increments on Figures 2-2a (1995), 2-2b (2000), 2-2c (2005), and 2-2d (2010). Zone 7's metered turnout locations are shown in these figures.

DSRSD began constructing its major recycled water infrastructure in 1998. The system continues to expand with the construction of approved development in eastern Dublin and Dougherty Valley. The entire DSRSD recycled water distribution system currently includes 56 miles of recycled water pipelines. Expansion of DSRSD's major recycled water infrastructure from 2000 to present is illustrated on Figures 2-3a (2000), 2-3b (2005), and 2-3c (2010). DERWA infrastructure, which provides recycled water to DSRSD and EBMUD, and major metering points also are shown on these figures.

2.2.4 Physical Description—Emergency Interties

DSRSD currently has five potable water pipeline interties—three with EBMUD and two with the City of Pleasanton—for rapid emergency response. Each emergency intertie was added as DSRSD’s potable water system expanded, creating an opportunity for interconnection with the adjacent agency. The locations of these interties are shown on Figures 2-2a, 2-2b, 2-2c, and 2-2d. The interties are strictly for emergency conditions, such as a major pipeline break, supply contamination, or interruption of deliveries due to earthquake, flood, or other disaster. Each agency participating in an intertie can obtain water from the other during an emergency.

2.2.5 Physical Description—Climate

The climate of DSRSD’s service area is best described as Mediterranean, characterized by hot, dry summers and cool winters. Precipitation in the area averages around 15 inches per year, as shown in Table 2-1. The table also includes the average monthly temperature and rainfall for Livermore, California, which is located approximately 10 miles to the east of DSRSD’s service area. Average evapotranspiration (ET_o) is based on data from a California Irrigation Management Information System (CIMIS) monitoring station in Pleasanton, California, which is located just south of DSRSD’s service area.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average ET _o , inches ¹	0.82	1.47	2.92	4.40	5.57	6.66	7.40	6.35	4.73	3.34	1.54	1.01	46.21
Average Temperature, °F ²	47.2	51.1	53.8	57.7	62.8	68.3	72.0	71.9	69.6	63.2	53.2	47.0	59.8
Average Daily Minimum Temperature, °F ²	37.4	40.3	42.3	44.2	48.5	52.5	54.9	55	53.2	48.4	41.5	36.9	46.3
Average Daily Maximum Temperature, °F ²	56.9	61.8	65.3	71.2	77.0	84.0	89.1	88.7	85.9	77.9	64.8	57.0	73.3
Average Rainfall, inches ²	2.99	2.77	2.47	0.96	0.43	0.09	0.03	0.08	0.24	0.84	1.88	2.04	14.82

¹ “Monthly Average ET_o Report,” Station 191, Pleasanton, for January 2011, CIMIS website, www.cimis.water.ca.gov.
² “Climate Data,” Livermore, CA, based on 1971-2000 data, DWR website, www.water.ca.gov/floodmgmt/hafoo/csc/climate_data/sfbay.cfm.

2.3 Water Service Area Population

Water Code Section 10631a

DSRSD currently supplies potable water to approximately 17,671 residential, commercial, construction, and landscape irrigation customers⁸ in the City of Dublin, California, and the Dougherty Valley in San Ramon, California. DSRSD also supplies recycled water to 283 customers in the City of Dublin (east of Highway 680) and Dougherty Valley.⁹

Since the early 1980s, the population in DSRSD's service area has roughly tripled and growth is expected to continue. Historical and projected populations in DSRSD's service area are shown on Figure 2-4 and population projections are summarized in Table 2-2. Overall, the population is expected to increase by 50 percent (34,580 people) between 2010 and buildout in 2030. The estimates and projections for the City of Dublin and Dougherty Valley are discussed in detail below.

2.3.1 Dublin

Dublin has grown from a rural crossroads community in the 1950s and 1960s to a principally suburban community with a burgeoning commercial area. Like other East Bay and Tri-Valley communities, growth over that last 30 years has been particularly strong.

Table 2-2. Population — Current and Projected (DWR Table 2)

	2010	2015	2020	2025	2030	2035	Data source
City of Dublin ²	48,821	53,999	64,039	69,778	74,592	74,592	3
Dougherty Valley	19,146	24,638	28,525	28,525	28,525	28,525	4, 5
Total Service Area Population¹	67,967	78,637	92,564	98,303	103,117	103,117	
¹ Service area population is defined as the population served by the distribution system. See Technical Methodology 2: Service Area Population (2010 UWMP Guidebook, Section M).							
² State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2010, for 1-1-2010.							
³ Estimated based on uniform growth and projected buildout populations and buildout years for City of Dublin. (Source: City of Dublin General Plan; buildout in 2030.)							
⁴ 2010 data is estimated based on residential units incorporated by City of San Ramon and the Census (2000) Density factors of 3.02 persons per owner-occupied unit and 2.71 persons per renter-occupied unit for Census Tract 3551.04 for Contra Costa County.							
⁵ Estimated based on uniform growth and projected buildout populations and buildout years for Dougherty Valley (Source: Dougherty Valley Specific Plan; Windemere buildout in 2013 and Shapell buildout in 2020). Estimates include infill development. Buildout in 2020.							

8. Total number of potable water service accounts.

9. Total number of recycled water service accounts.

DSRSD's service area in Alameda County is coterminous with the City of Dublin. As the City of Dublin has expanded its city limits and sphere of influence, DSRSD's service area boundaries also have expanded. DSRSD's population estimates and projections for the City of Dublin are consistent with the Department of Finance's population estimates and the *City of Dublin General Plan (Updated January 19, 2010)*.¹⁰ The City of Dublin is expected to increase by 53 percent (about 25,770 people) between 2010 and 2030, its buildout.

2.3.2 Dougherty Valley

Prior to 2003, DSRSD did not provide water to Dougherty Valley, a previously unincorporated and undeveloped area in Contra Costa County. In the late 1990s and early 2000s, major construction began for a master planned community in the area. Contra Costa County was the lead planning agency. Upon completion of infrastructure and occupancy of buildings, neighborhoods in Dougherty Valley were annexed to the City of San Ramon. DSRSD began water service after the installation of the potable water and recycled water infrastructure.

Historical population estimates are based on residential units incorporated by the City of San Ramon and census (2000) density factors of 3.02 persons per owner-occupied unit and 2.71 persons per renter-occupied unit for census tract 3551.04 in Contra Costa County. Population projections for Dougherty Valley are based on the City of San Ramon's 2006 *Dougherty Valley Specific Plan* and *General Plan 2030* and assume uniform population growth up to projected buildout populations in estimated buildout years. Dougherty Valley population is expected to increase by 49 percent (about 9,380 people) between 2010 and 2020, its buildout.

2.4 Customer Demographics

Water Code Section 10631a

As shown in Table 2-2 and on Figure 2-4, buildout of the City of Dublin is projected to occur in 2030, while full buildout of Dougherty Valley is projected to occur in 2020 (Windemere portion to buildout in 2013 and Shapell portion to buildout in 2020).

Current and projected numbers of meter connections by customer type (sector), as well as current and projected estimates of affordable housing units within DSRSD's service area, are shown in Table 2-3. Currently (2010), about 89 percent of DSRSD potable water customers are residential, about 7 percent are commercial, less than 1 percent are

10. State of California, Department of Finance, *E-4 Population Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark*. Sacramento, California, May 2010 for the City of Dublin.

institutional/governmental, and about 4 percent are potable water irrigation. Recycled water customers make up 1.6 percent of the total number of accounts but received more than 14 percent of DSRSD total water deliveries in 2010.

Customer Type (Sector)	20101	20152	2020	2025	2030	2035
Potable Water						
Residential (Total DSRSD Service Area) ³	15,661	18,397	23,598	25,451	26,553	26,970
<i>City of Dublin Affordable Housing Units</i> ⁴	1,412	1,655	1,818	2,021	2,224	2,237
<i>Dougherty Valley Affordable Housing Units</i> ⁵	1,567	2,202	2,494	2,494	2,494	2,494
Commercial ⁶	1,218	1,982	2,166	2,415	2,527	2,569
Landscape Irrigation ⁶	686	1,120	1,338	1,504	1,587	1,613
Institutional/Governmental ⁷	106	232	274	304	307	311
<i>Potable Water Subtotal</i>	<i>17,671</i>	<i>21,731</i>	<i>27,375</i>	<i>29,674</i>	<i>30,973</i>	<i>31,463</i>
Recycled Water Irrigation	283	452	732	860	885	910
Total	17,954	22,183	28,108	30,534	31,858	32,373
<p>¹ DSRSD water accounts as of December 31, 2010.</p> <p>² DSRSD land use projections as of March 2011.</p> <p>³ Future residential dwelling units based on the sum of the residential units anticipated for individual projects and subdivisions per the land use projections and anticipated development scheduled as provided by the city of Dublin and individual developers.</p> <p>⁴ City of Dublin Housing Element (2009-2014), adopted by the Dublin City Council on March 2, 2010. Affordable housing units for City of Dublin based on Tables C-19, C-31 and C-32. Future affordable housing units based on City of Dublin Inclusionary Zone Ordinance Requirements (50 percent of 12.5 percent of total new dwelling units, or 6.25 percent of total new dwelling units, are for very low or low income residents).</p> <p>⁵ City of San Ramon (Dougherty Valley Project Data on Affordable Housing) and Annual Compliance Reports, Windemere Contra Costa County, October 15, 2010, section 3.05; and Gale Ranch Compliance Reports, Shapell Homes, October 14, 2010, section 3.B. Future affordable housing units for Dougherty Valley based on the following: 25 percent of total dwelling units are required to be affordable housing, with 35 percent of those required for very low and low income residents.</p> <p>⁶ Future projections for number of commercial, school, and irrigation connections based on current density of those connections applied to future projected acreage for those land uses.</p> <p>⁷ Future jail connections assumed to remain the same as existing jail connections.</p>						

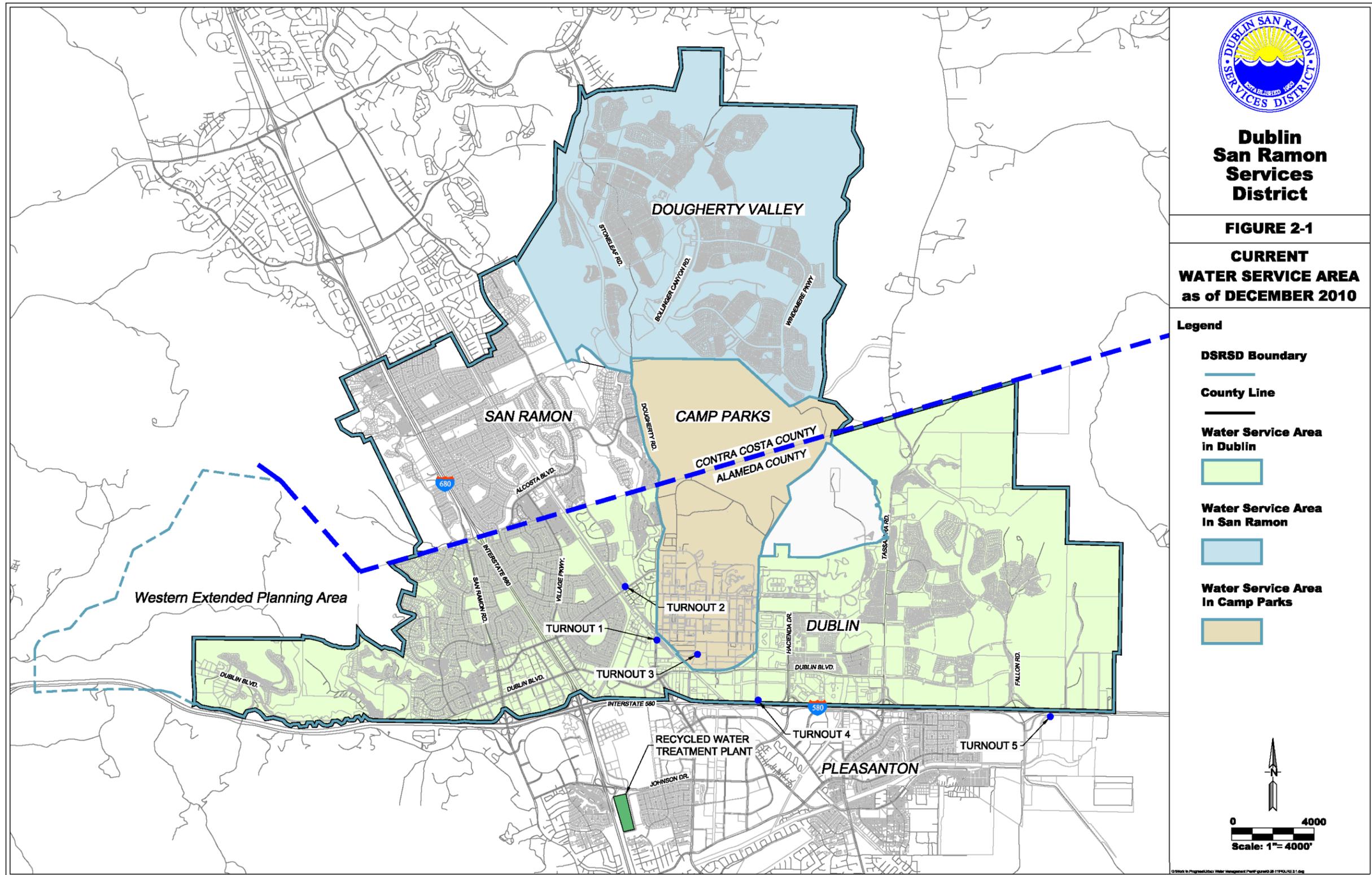
Based on the *City of Dublin General Plan* and *2009-2014 Housing Element*, and the *City of San Ramon General Plan 2030* and *Dougherty Valley Specific Plan*, DSRSD expects its service area population to increase by 34,581 people (50 percent) from 2010 to 2035. By 2035, customer sectors will shift slightly as follows: 86 percent residential, about 8 percent commercial, 1 percent institutional/governmental; and about 5 percent potable water irrigation. Recycled water customers will make up 2.8 percent of the total number of accounts, but will receive 15.6 percent of DSRSD total water deliveries in 2035.

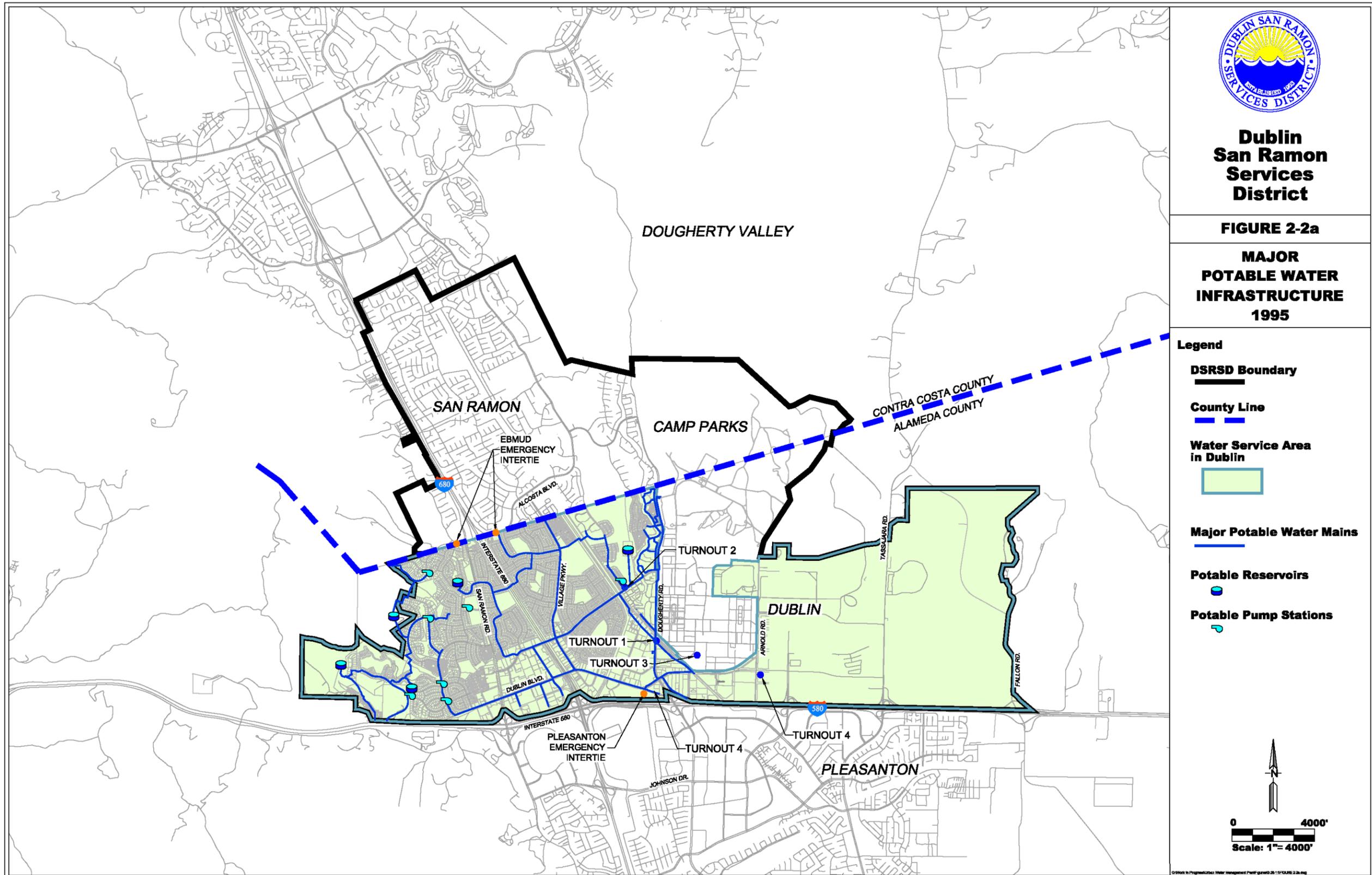
Of the residential units, 4,731 units (17.5 percent) are expected to be affordable housing units for very low or low income residents. In accordance with Senate Bill 1087, DSRSD will provide priority water service to these units.

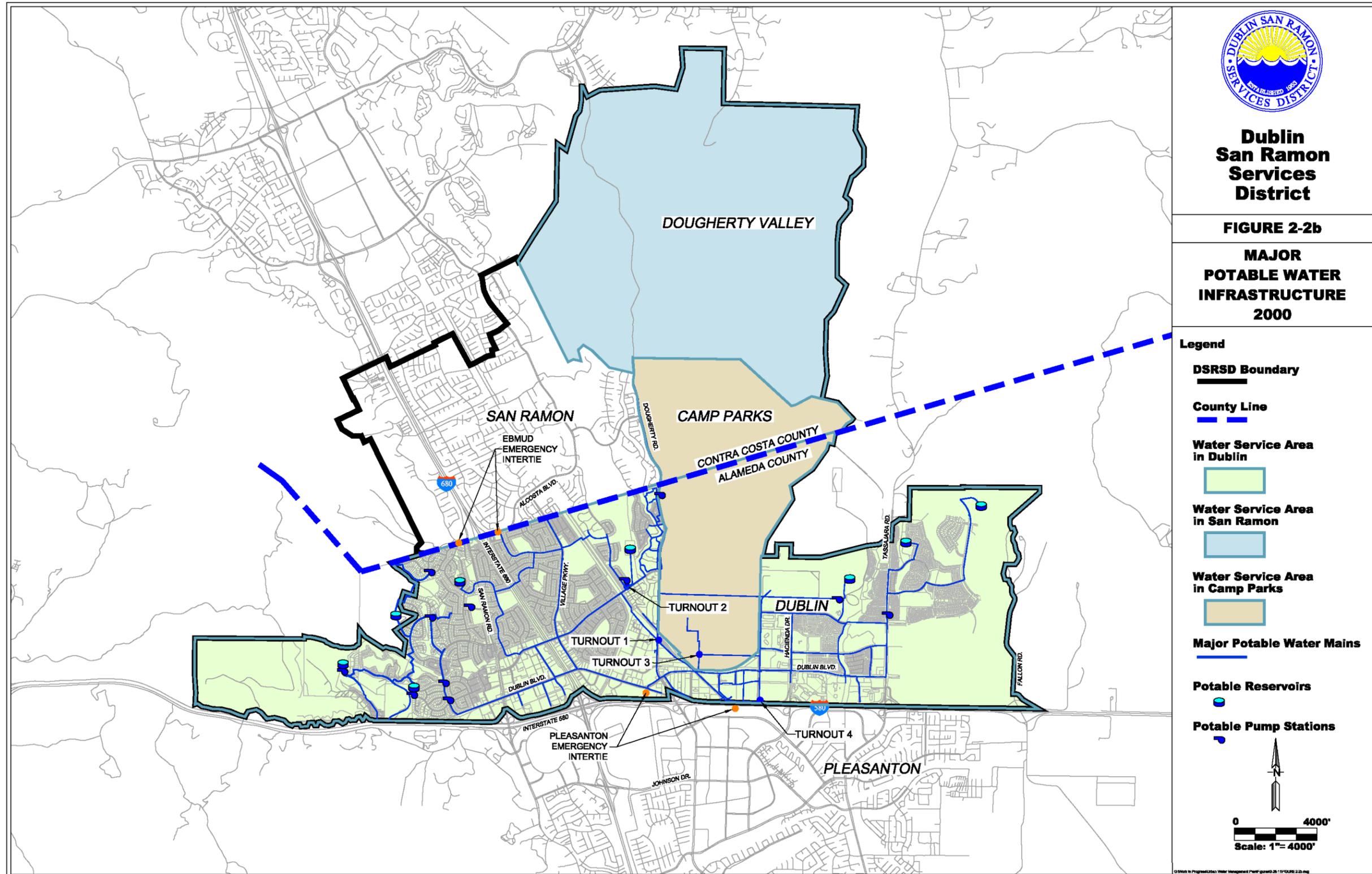
In 2000, the people of Dublin approved Measure M, which established an urban limit line in the Western Extended Planning Area (shown in Figure 2-1) of the City of Dublin's General Plan for a period of 30 years. During this period, the City is restricted in approving uses or extensions of city services, facilities, and roads for urban development west of the urban limit line.¹¹ DSRSD's service area is coterminous with the City of Dublin's city limit. The restriction of services to the Western Extended Planning Area will end in 2030. DSRSD shows no water demand for that area for 2035 because the City of Dublin has no planned development for that area after 2030. DSRSD will have to review water service to that area when the City of Dublin adopts a general plan that includes that area.

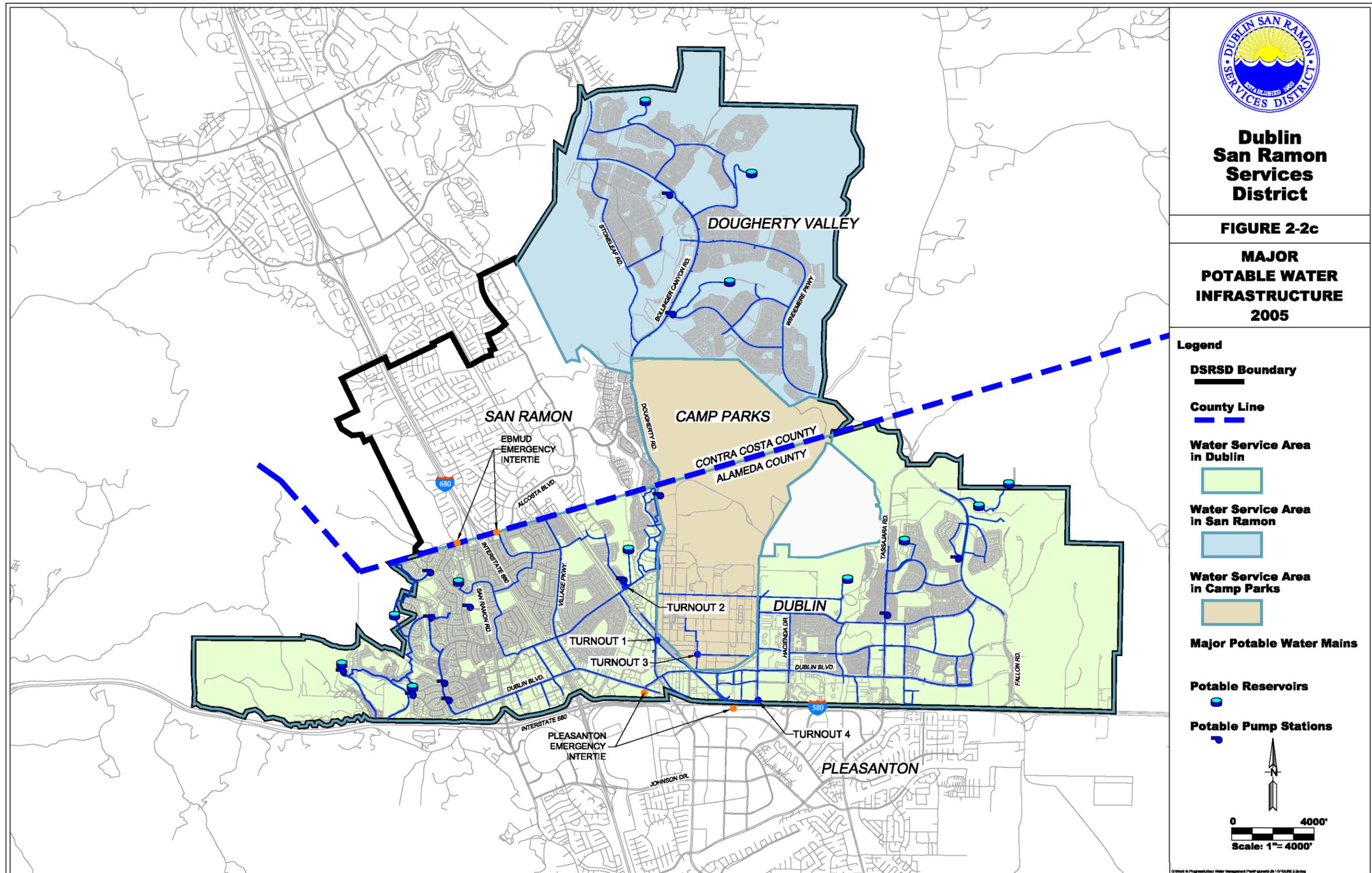
Due to increased water demand, DSRSD seeks to augment its potable water supply with recycled water. DSRSD has expanded its recycled water distribution system in the newly developed area in eastern Dublin and Dougherty Valley. DSRSD plans to further expand its recycled water distribution system in the more established areas in Dublin and Camp Parks to connect high demand landscape irrigation systems. To fund this expansion, DSRSD has applied for the Department of Water Resources Proposition 84 Round 1 Implementation Grant as part of the San Francisco Bay Area Integrated Regional Water Management Plan. Completion of this 2010 UWMP is a condition of receiving a grant award.

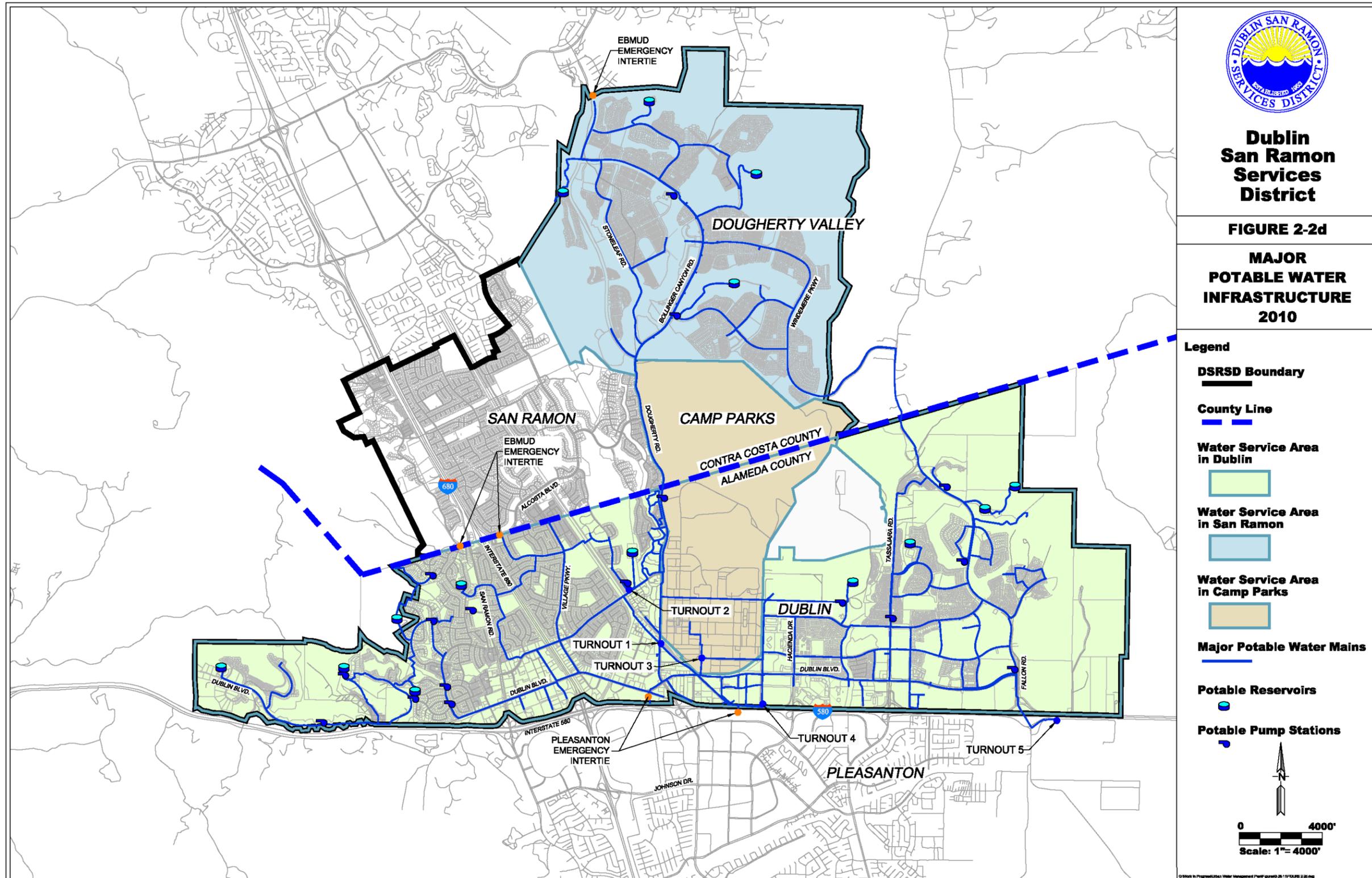
11. Silver, Elizabeth, *City Attorney's Impartial Analysis of Measure M*, City of Dublin, 2000.

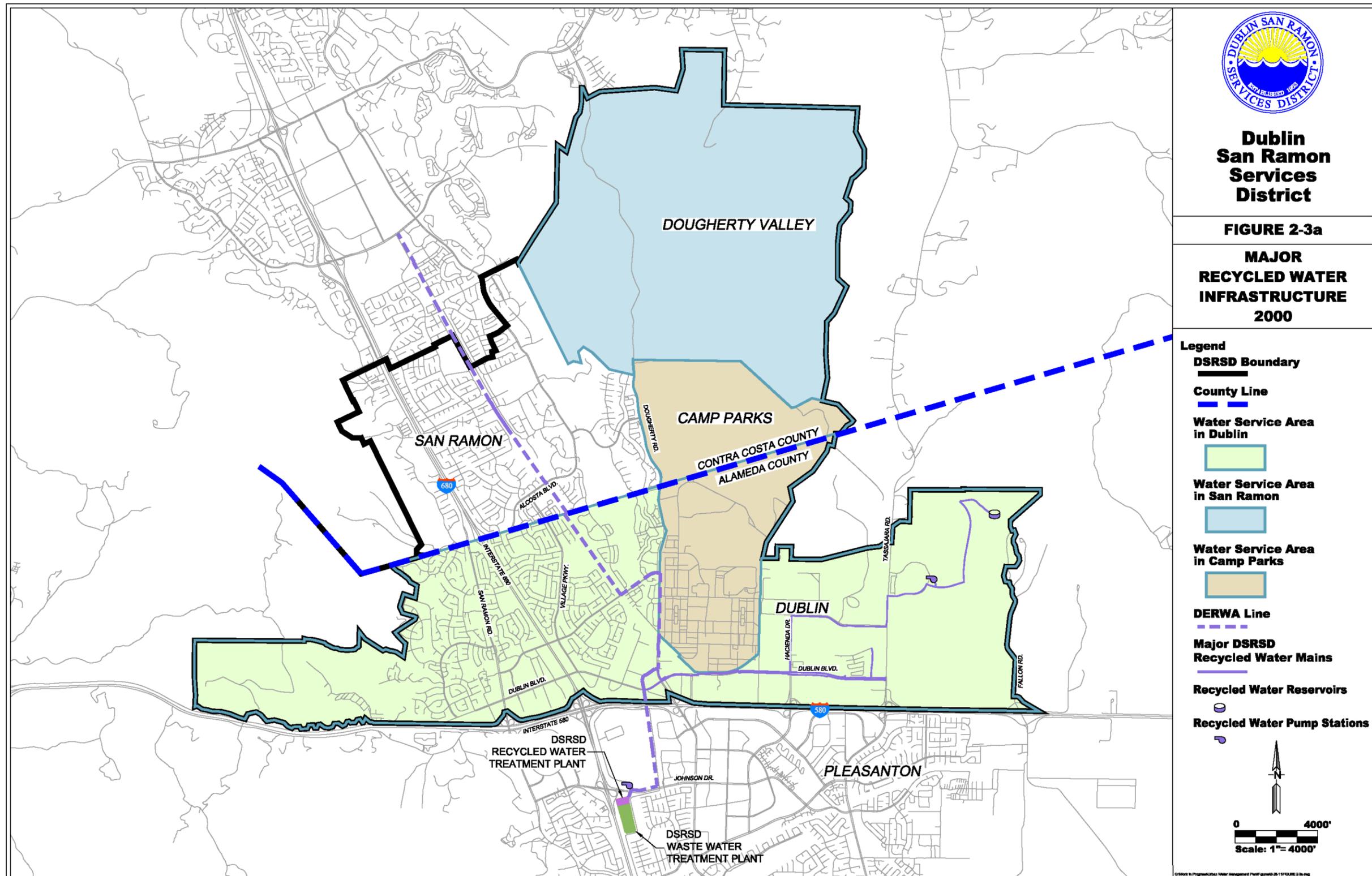


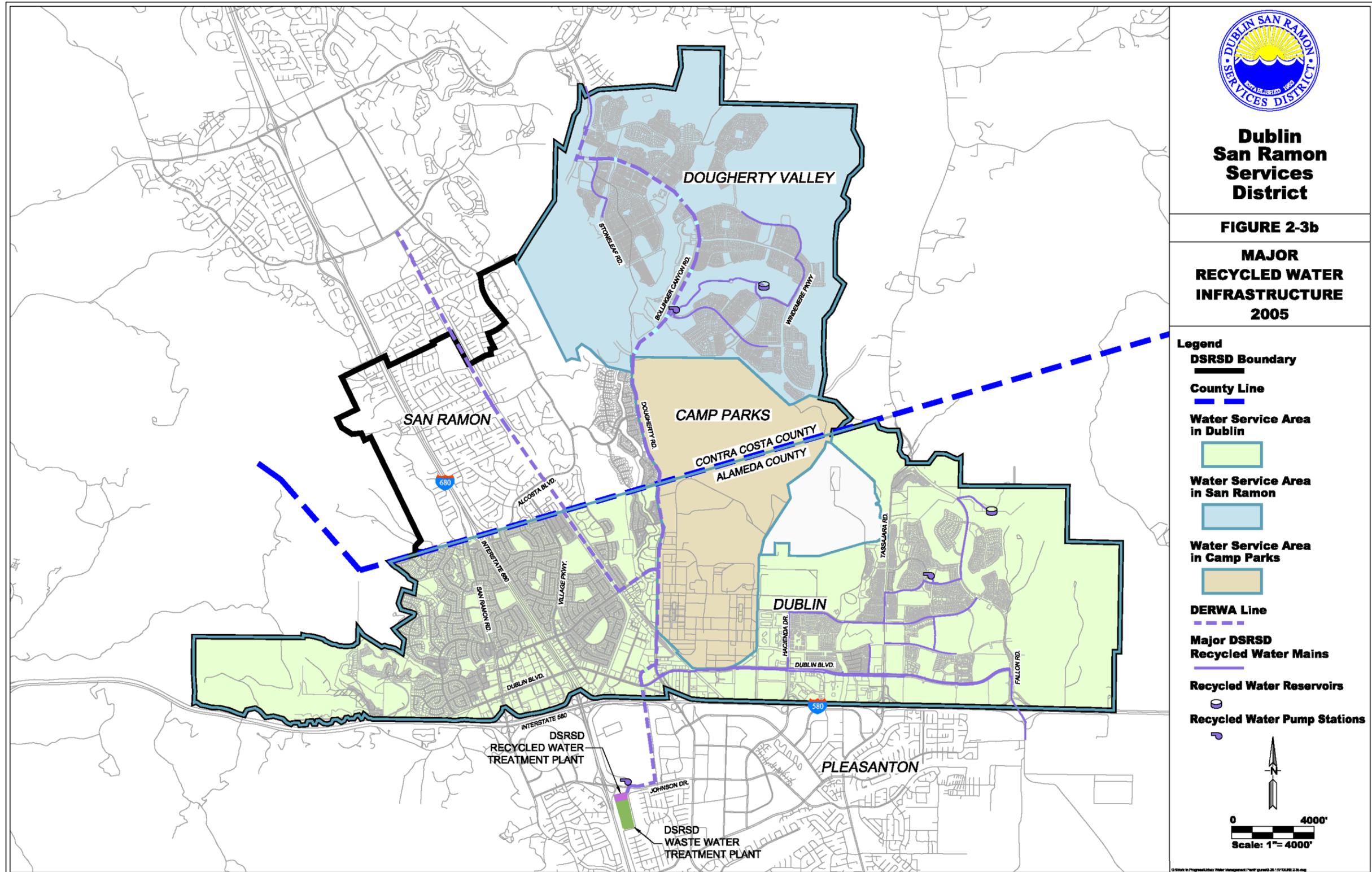












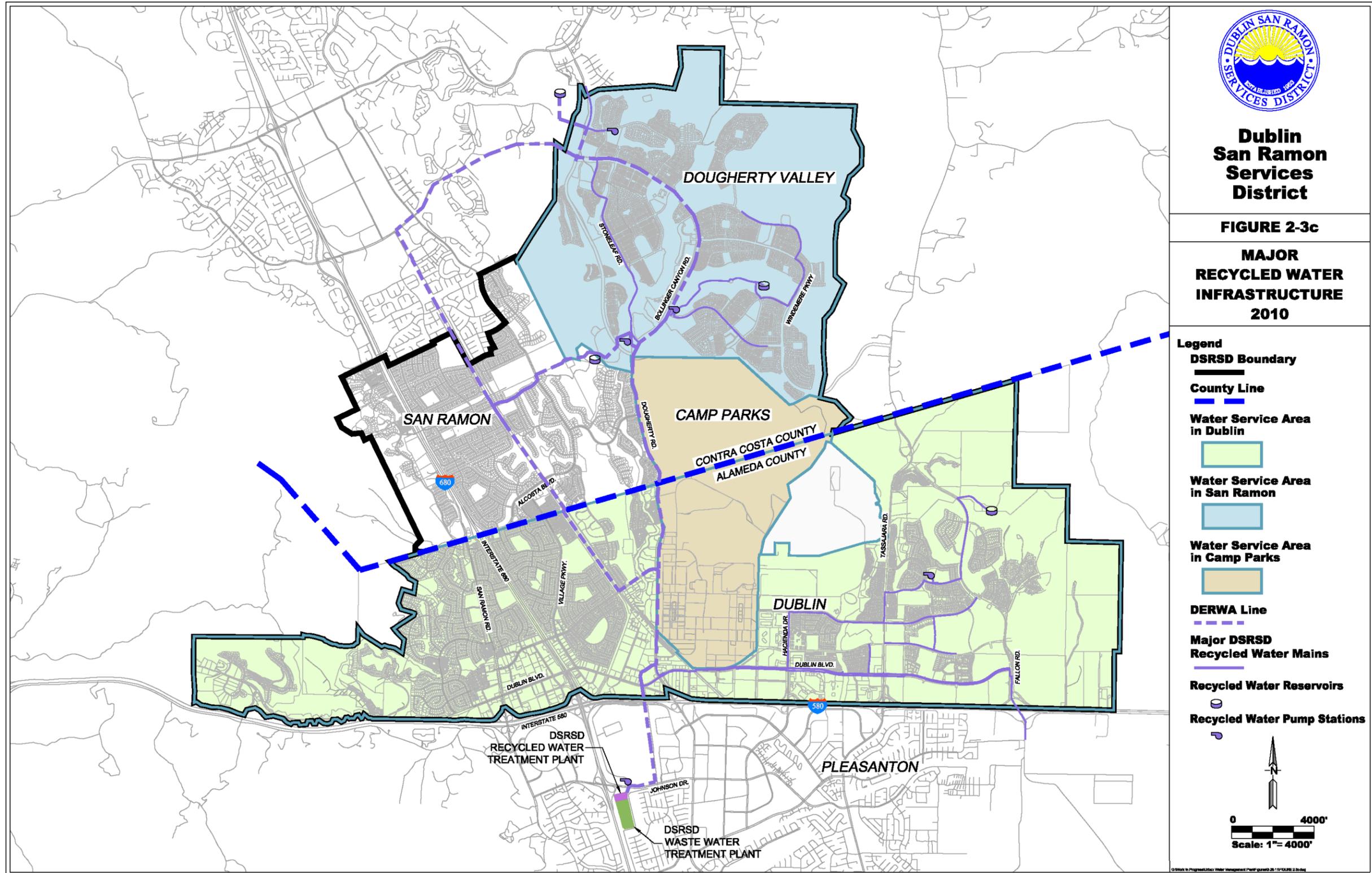
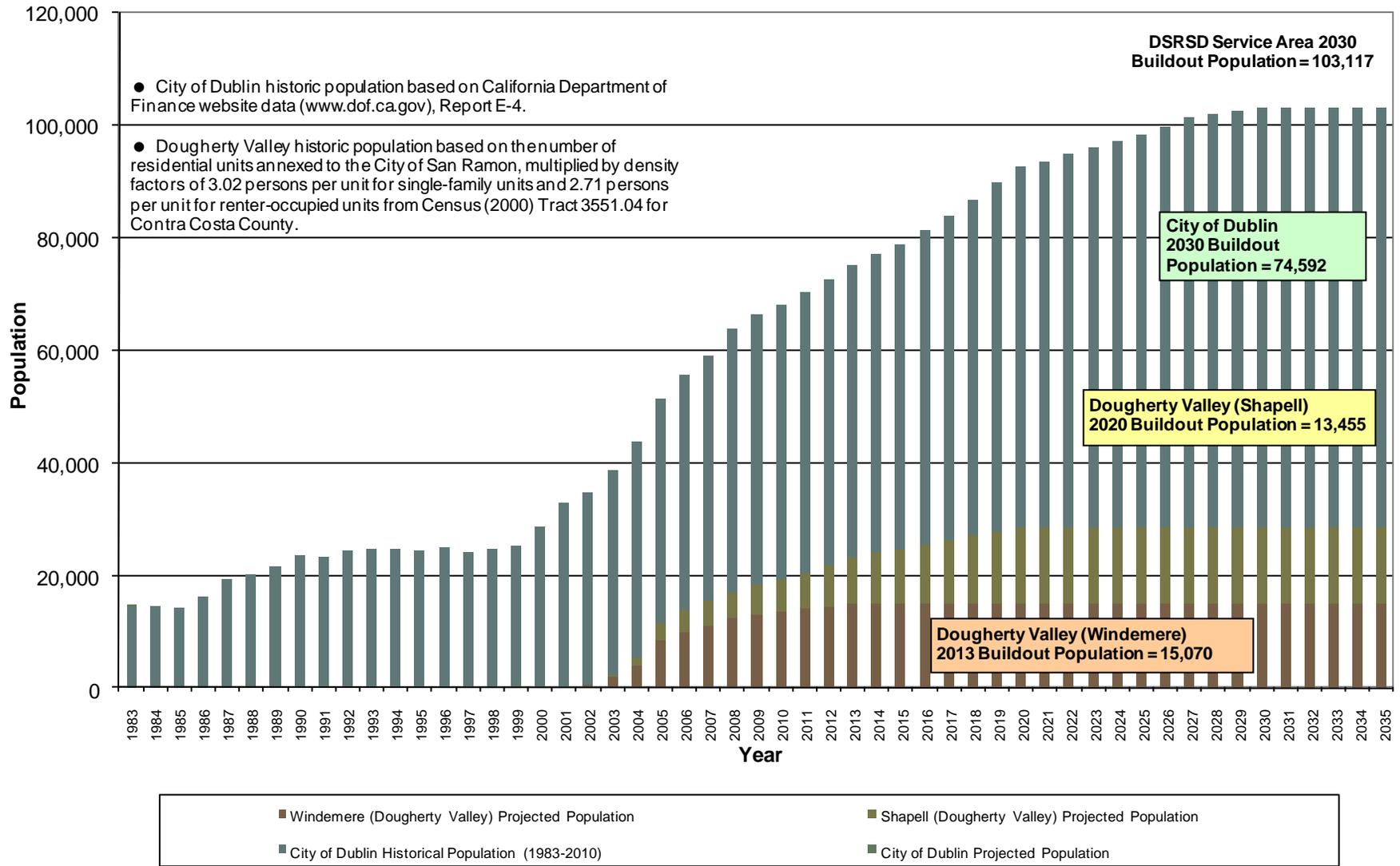


Figure 2-4. DSRSD Water Service Area Population





Past, Present and Projected Water Demands

DSRSD’s urban water system demands are described in this section. In conformance with the Water Conservation Act of 2009, baseline (base daily per capita) water use and interim and urban water use targets are included. Current water system demands are quantified by customer category and are projected over the planning horizon of the UWMP. These projections include system water losses and water use target compliance. Water sales to other agencies are not discussed because DSRSD does not sell water to other water agencies.

This section includes a detailed description of how DSRSD calculated its baseline and targets, following the technical methods and methodologies described in “Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use,” published by DWR as Part II, Section M of the *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan* (Guidebook). DSRSD’s approach and criteria for developing the required baselines and targets conform to Part II, Section D of the Guidebook, “Baseline and Target Determination.”

3.1 Baselines and Targets

Water Code Section 10608.20(e)

In November 2009, SBx7_7, the Water Conservation Act of 2009 (Act), was enacted as part of a comprehensive water legislation package and subsequently incorporated into Division 6 of the California Water Code, commencing with Section 10608 of Part 2.55. The Act addresses both urban and agricultural water conservation. Urban provisions include the “20 x 2020 Water Conservation Plan,” which sets a goal of reducing urban per capita water use by 20 percent statewide and directs urban retail water suppliers to set 2020 urban water use targets. DWR developed technical methodologies and criteria to ensure consistent implementation of the Act and to guide urban retail water suppliers in calculating baseline and compliance levels of water use. The technical methodologies and criteria are included in “Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use,” (Methodologies) published by DWR as Part II, Section M of the *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan* (Guidebook). DSRSD followed these technical methodologies and criteria in developing its baseline and water conservation targets. Although DSRSD conducts water conservation efforts regionally with Zone 7 and the other retailers in the Livermore-Amador Valley, DSRSD is complying individually with the Act.

3.1.1 Baseline Water Use

Water Code Section 10608.20(e)

DSRSD is required to define a 10- to 15-year base (or baseline) period that will be used to develop its target levels of per capita water use by 2020. DSRSD must also calculate water use for a 5-year baseline period and use that value to determine a minimum required reduction in per capita water use by 2020.

The baseline is defined as the average gross water use per capita per day over a continuous 10-year period ending between December 31, 2004 and December 31, 2010. If DSRSD supplied at least 10 percent of its 2008 water demand with recycled water, an additional five years may be included in the baseline period, still ending between December 31, 2004 and December 31, 2010.¹² As shown in Table 3-1, 15 percent of the District's water demand in 2008 was met with recycled water. Therefore, DSRSD may select a range of 10 to 15 years for its base period. ***For baseline calculations, DSRSD selected the continuous 10-year period ending December 2005.***

The minimum water use reduction target to be achieved by 2020 is 95 percent (5 percent reduction) of a water supplier's "average gross water use," during a continuous 5-year period ending between December 31, 2007 and December 31, 2010.¹³ ***For calculating the minimum required reduction in water use by 2020, DSRSD selected the continuous 5-year base period ending December 31, 2007.***

DSRSD's baseline determination is discussed below. Supporting data and calculations are included in Appendix F.

3.1.1.1 Gross Water Use

Water Code Section 10608.12(g)

DSRSD calculated gross water use in accordance with Methodology 1 of the Methodologies.¹⁴ DSRSD's potable water distribution system is described in Section 2.2.3. DSRSD's gross water use is defined as the total volume of water entering DSRSD's potable water distribution system through five metered Zone 7 (DSRSD's sole water supplier) turnouts (shown on Figure 2-2d), over the course of a calendar year beginning January 1 and ending December 31. DSRSD's recycled water production and deliveries are not included in gross water use. Gross water use calculations for calendar years 1996 to 2005 are shown in Table F-1 in Appendix F, for the continuous 10-year

¹² Water Code Section 10608.12.(b).

¹³ Water Code Sections 10608.22 and 10608.12.(b).(3).

¹⁴ DWR, "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan," Section M, p. 14-23.

base period ending December 31, 2005. Calculations for calendar years 2003 to 2007 are shown in Table F-2 in Appendix F, for the continuous 5-year period ending December 31, 2007.

3.1.1.2 Service Area Population

Water Code Section 10608.20(f)

DSRSD determined service area population in accordance with Methodology 2 of the Methodologies.¹⁵ DSRSD's water service area boundary is shown in Figure 2-1 and its service area population is described in Section 2.3. DSRSD's water service area includes both the City of Dublin and the Dougherty Valley portion of San Ramon. Historical population in DSRSD's water service area is shown in Table F-3 in Appendix F.

In Alameda County, DSRSD's water service area is coterminous with the City of Dublin. In accordance with Methodology 2, DSRSD is a Category 1 water provider to the City of Dublin. The City of Dublin includes Camp Parks, the Federal Correctional Institution, and the Alameda County Santa Rita Jail. DSRSD's population estimates for the City of Dublin are consistent with the Department of Finance's population estimates.¹⁶

In Contra Costa County, DSRSD's water service area is the Dougherty Valley area. Prior to 2003, DSRSD did not provide water to Dougherty Valley. In the late 1990s and early

Table 3-1. Base Period Ranges (DWR Table 13)			
Base	Parameter	Value	Units
10- to 15-year base period	2008 total water deliveries	3939.23	MG
	2008 total volume of delivered recycled water	595.19	MG
	2008 recycled water as a percent of total deliveries	15%	percent
	Number of years in base period ¹	10	years
	Year beginning base period range	1996	
	Year ending base period range ²	2005	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2003	
	Year ending base period range ³	2007	
¹ If the 2008 recycled water percent is less than 10 percent, then the first base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first base 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.			

15. Ibid, p. 24-29.

16. State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2010 for the City of Dublin.

2000s, two developers, Shapell Industries of Northern California (Shapell) and Windemere BLC (Windemere), began building a master planned community in the area. Contra Costa County was the lead planning agency. Upon completion of infrastructure and occupancy of buildings, neighborhoods in Dougherty Valley were annexed to the City of San Ramon. In accordance with Methodology 2 of the Methodologies, DSRSD is a Category 2 water provider to the Dougherty Valley portion of San Ramon.¹⁷ Historical population estimates are based on residential units incorporated by the City of San Ramon and the census (2000) density factors of 3.02 persons per owner-occupied unit and 2.71 persons per renter-occupied unit for census tract 3551.04 for Contra Costa County. Historical population calculations for Dougherty Valley are shown in Table F-4 in Appendix F.

3.1.1.3 Base Daily Per Capita Use for 20 Percent by 2020 Baseline

Water Code Section 10608.20

Base daily per capita water use is defined as average gross water use, expressed in gallons per capita per day (GPCD), for a continuous, multiyear base period. DSRSD calculated its base daily per capita water use in accordance with Methodology 3 of the Methodologies.¹⁸ Under Water Code Section 10608.20, DSRSD must select a 10- to 15-year continuous period, ending between December 31, 2004 and December 31, 2010, as the baseline for a 20 percent reduction in urban per capita water use. ***DSRSD selected the continuous 10-year period ending December 2005 as its base period.*** This selection excludes years when voluntary water reductions were requested by DSRSD. Therefore, DSRSD customers, who have successfully implemented water conservation measures in recent years, are not penalized.

DSRSD's calculation for base daily per capita water use is shown in Table 3-2. Gross water use and service area population were determined as indicated above. Supporting data is included in Appendix F. ***For DSRSD, base daily per capita water use is 204 GPCD.***

17. DWR, "Guidebook," p. 24-29.

18. Ibid, p. 30-35.

Table 3-2. DSRSD Base Daily Per Capita Water Use - 10 Year Range for Baseline (DWR Table 14)				
Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (GPCD)
Sequence Year	Calendar Year			
Year 1	1996	24,829	3.8084	160
Year 2	1997	23,928	4.1433	173
Year 3	1998	24,506	4.2518	174
Year 4	1999	25,045	5.8607	234
Year 5	2000	28,540	6.5779	230
Year 6	2001	32,740	7.8691	240
Year 7	2002	34,596	7.7915	225
Year 8	2003	38,547	8.0674	209
Year 9	2004	43,654	9.8000	224
Year 10	2005	51,339	8.5933	167
Base Daily Per Capita Water Use				204

3.1.1.4 Base Daily Per Capita Use for Minimum Water Use Reduction Baseline

Water Code Section 10608.22

Under Water Code Section 10608.22, DSRSD must select a 5-year continuous base period, ending between December 31, 2007 and December 31, 2010, to use in calculating a minimum water use reduction by 2020. *DSRSD selected the continuous 5-year period ending December 31, 2007.*

DSRSD's calculation for the minimum reduction baseline is shown in Table 3-3. Gross water use and service area population were determined as indicated above. Supporting data is included in Appendix F. *For DSRSD, base daily per capita water use for the purpose of calculating minimum water use reduction is 185 GPCD.*

3.1.2 Water Use Targets

Water Code Section 10608.20(e)

DSRSD must set a 2020 water use target and a 2015 interim target using one of these four methods described in Water Code Section 10608.20(b):

- Method 1: 80 percent of the water supplier's baseline per capita water use; or,
- Method 2: Per capita daily water use estimated using the sum of performance standards applied to indoor residential use, landscaped area water use, and CII uses; or,

- Method 3: 95 percent of the applicable state hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservation Plan; or,
- Method 4: Total potential water savings (a provisional method).

Regardless of the target method selected, DSRSD may need to adjust its 2020 target to achieve a minimum reduction in water use. If the calculated 2020 urban water use target is higher than the minimum required reduction target, DSRSD must use the minimum required reduction target.

DSRSD will need to compare its actual water use in 2020 with its calculated targets to assess compliance. DSRSD will need to report interim compliance in 2015 as compared to an interim target, which is generally halfway between the baseline water use and the 2020 target level. The years 2015 and 2020 are referred to in the methodologies as compliance years. All baseline, target, and compliance-year water use will be calculated and reported in gallons per capita per day (GPCD).

DSRSD may set its water use target and comply individually, or as part of a regional alliance. ***DSRSD has elected to comply individually with the Water Conservation Act of 2009.*** In its 2015 or 2020 UWMP, DSRSD may revise its water use target. It may also change the method it uses to set its water use target and report it in a 2010 amended plan or in its 2015 UWMP. However, after submitting its 2015 UWMP, DSRSD will not be permitted to change target methods or its target for 2020.

In sum, DSRSD must comply by establishing 2015 and 2020 water use targets, demonstrate that its water use is in compliance with its targets, and report water use baselines, targets, compliance year water use, and supporting data in its UWMP. Water Code Section 10608.56 (a) states that a water supplier not in compliance will not be eligible for water grants or loans that may be administered by DWR or other state agencies. DSRSD is seeking state funding for its recycled water projects and intends to comply with these requirements.

3.1.2.1 Method Used to Determine Interim and Urban Water Use Targets

DSRSD has selected Method 1¹⁹ to determine its interim and urban (2020) water use targets. DSRSD staff has conducted calculations using the methods listed above and found that Method 1 is most appropriate for the DSRSD service area. The method yields a reachable and maintainable target for DSRSD customers, without further hardship.

As described in Section 6, DSRSD has been aggressive in implementing water conservation measures in its service area. In June 2007, the DSRSD requested 10percent voluntary water conservation from its customers due to drought conditions and Delta pumping restrictions. In July 2009, DSRSD increased the voluntary reduction to 20 percent due to ongoing drought conditions and Delta pumping restrictions. These

19. Water Code Section 10608.20(b)(1).

requests resulted in sharp decreases in per capita demand. DSRSD intends to maintain aggressive water conservation measures. However, implementing increasingly more restrictive water conservation efforts may place undue hardship on the communities that DSRSD serves.

3.1.2.2 Water Use Targets

Under Method 1, the urban water use target is 80 percent of the baseline shown in Table 3-2. DSRSD must meet this urban water use target by 2020. The interim target is halfway between the baseline and 80 percent of the baseline—90 percent of the baseline shown in Table 3-2. DSRSD must meet this interim target by 2015. Regardless of the target method selected, these targets may need to be adjusted further to achieve a minimum reduction in water use of 5 percent of the baseline shown in Table 3-3.

Table 3-3. DSRSD Base Daily Per Capita Water Use - 5 Year Range for Minimum Reduction Baseline (DWR Table 15)				
Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (GPCD)
Sequence Year	Calendar Year			
Year 1	2003	38,545	8.0674	209
Year 2	2004	43,654	9.8000	224
Year 3	2005	51,340	8.5933	167
Year 4	2006	55,598	8.7714	158
Year 5	2007	59,002	9.7172	165
Base Daily Per Capita Water Use				185

DSRSD's interim (2015) and urban (2020) water use targets and minimum water use target requirement are shown in Table 3-4. Because the minimum water use target is greater than the urban water use target calculated using Method 1, DSRSD's urban water use target does not need to be adjusted.

Table 3-4. DSRSD Interim and Urban Water Use Targets		
Method 1	Compliance Year	Target (GPCD)
Interim Target	2015	183
Urban Water Use Target	2020	163
Minimum Water Use Target	2020	175

On May 17, 2011, at its regularly scheduled board meeting, the DSRSD Board of Directors will hold a public hearing to discuss compliance with the Water Conservation Act of 2009. The following points will be discussed:

- baseline determination and base daily per capita use,
- baseline for minimum water use reduction,
- method used to determine interim and urban water use targets,
- interim and urban water use targets,
- minimum water use reduction target,
- implementation plan for complying with the Water Conservation Act of 2009, and
- impacts to the communities that DSRSD serves.

The general public will have the opportunity to comment at this public hearing. Comments will be collected and addressed in the finalized 2010 UWMP, which will be presented for adoption at the June 7, 2011 regularly scheduled DSRSD Board of Directors meeting. At that time, the DSRSD Board of Directors will adopt a resolution to adopt the method used for determining water use targets. A copy of the resolution will be included in Appendix D.

3.2 DSRSD Water Demands

Water Code Sections 10631(e)(1) and (2), and 10631.1(a)

3.2.1 Metered Projections

DSRSD's past, current, and projected potable water and recycled water deliveries are shown in five-year increments, from 2005 to 2035, in Table 3-5 and Figure 3-1. All DSRSD water deliveries are metered. DSRSD provides potable water services to the following sectors: single family residential, multifamily, commercial, industrial, institutional and governmental, and landscape irrigation. As discussed in Section 4.5, recycled water use in DSRSD's service area is primarily for landscape irrigation, with some incidental use at construction sites in the developing areas of Dublin. The processes by which DSRSD projects demand and its future number of accounts are described in Sections 3.2.1.1 and 3.2.1.2, respectively.

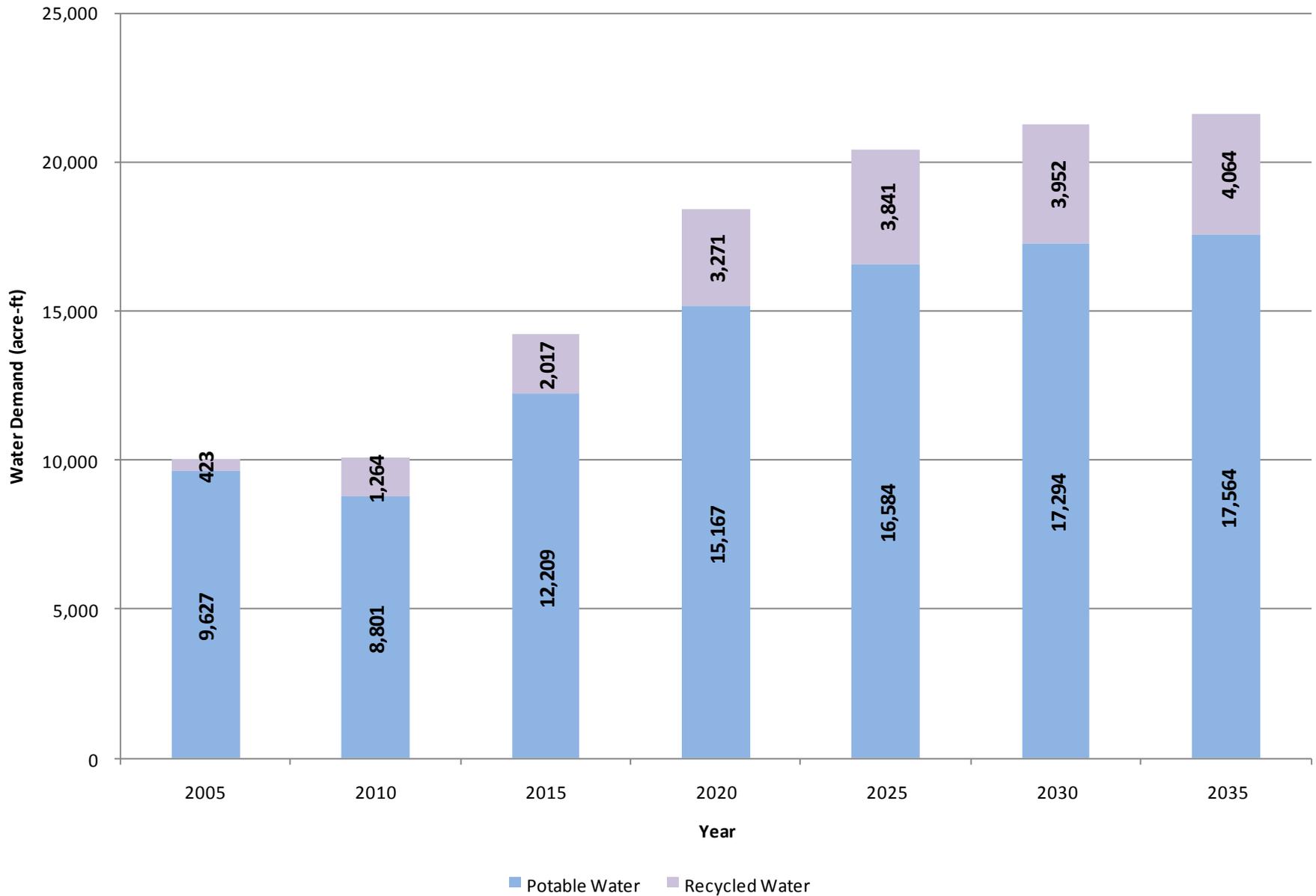
Water entering the DSRSD potable water distribution system is metered at the Zone 7 water turnouts, shown in Figure 2-1. Turnouts 1, 2, 4, and 5 operate continuously under normal conditions. Turnout 3 is normally held in reserve for emergency conditions. All the turnouts have Zone 7-owned magnetic meters installed that record water purchases by DSRSD. Turnouts 1, 2, 4, and 5 also contain meters operated by DSRSD to double-check the Zone 7-owned meters. Zone 7's meters are considered the meters of record. All meters are calibrated quarterly by independent third parties and witnessed by DSRSD field operations personnel. The meters are calibrated by comparing the electronic response of the metering elements to established standards. These meters are not calibrated volumetrically. Generally, calibrations have indicated only very small discrepancies between the measured values of the metering elements and the published standards for those meters. If the meters require adjustment, the adjustments are made at the time of the meter calibrations.

Water distributed to DSRSD customers is metered at the points of connection. Typically, single family residential, multifamily, commercial, industrial, institutional, and governmental water uses are metered in hundred cubic feet increments using magnetic drive positive displacement or compound water meters. Irrigation water uses are typically metered in hundred cubic feet increments using magnetic drive turbine meters. Actual meters are selected based on the flow range required for the use while providing maximum accuracy. Meter readings are taken on a bimonthly basis. To ensure accuracy of water meters, DSRSD maintains a meter replacement program. Water meters are replaced when they approach the end of their warranty period—either by age (15 years for 5/8-inch water meters or 10 years for larger meters) or by the volume of water passed through the meter.

Table 3-5. DSRSD Actual and Projected Metered Water Deliveries ¹ (AFA) (DWR Tables 3, 4, 5, 6 and 7)														
Water Use Sectors	Actual 2005		Actual 2010		2015		2020		2025		2030		2035	
	# of accounts	Volume												
Potable Water														
Single family	10,050	5,084	13,642	4,566	15,834	5,300	19,793	6,625	21,405	7,164	22,217	7,436	22,565	7,553
Multifamily	1,751	998	2,019	1,226	2,563	1,556	3,805	2,311	4,046	2,457	4,336	2,633	4,404	2,675
Commercial	947	1,576	1,218	835	1,982	1,359	2,166	1,485	2,415	1,655	2,527	1,732	2,569	1,761
Industrial	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Institutional/ governmental	69	763	106	798	232	1,747	274	2,064	304	2,291	307	2,310	311	2,340
Landscape	453	1,206	686	1,376	1,120	2,247	1,338	2,683	1,504	3,017	1,587	3,183	1,613	3,235
Agriculture	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potable Water Subtotal	13,270	9,627	17,671	8,801	21,731	12,209	27,375	15,167	29,674	16,584	30,973	17,294	31,463	17,564
Recycled Water	2	423	283	1,264	452	2,017	732	3,271	860	3,841	885	3,952	910	4,064
Total	13,272	10,050	17,954	10,065	22,183	14,226	28,108	18,438	30,534	20,425	31,858	21,246	32,373	21,628

¹ All of DSRSD's water deliveries are metered. There are no unmetered water deliveries in DSRSD's service area.

Figure 3-1. DSRSD Actual and Projected Metered Water Demands



3.2.1.1 Development of Water Demand Projections

DSRSD projects water demand based on the land uses in the general plans adopted by the cities and counties in its service area. Existing land uses are the starting point for DSRSD projections. The approved general plans of the City of San Ramon and the City of Dublin detail land uses at buildout in those cities, and DSRSD uses these projections as its endpoint. To fill in the land uses of the as-yet undeveloped areas, DSRSD uses the most recent schedule from the developer or the city planning departments. For some distant future projects, the schedule for development is based on the best judgment of DSRSD's Planning Division. In this way, the complete schedule for future land uses is incorporated into water demand projections; and, as development plans for individual parcels change, those changes are incorporated into the buildout demands.

In its *2005 Water System Master Plan*, DSRSD derived factors for water demand for various land uses in gallons per day per unit, or gallons per day per square foot. Thus, the water demand for each land use is the number of units for that specific land use times the water demand factor. The water demand for the development project is, thus, the sum of the water demand for the different land uses in that project. In March 2011, DSRSD began a review of those factors for residential land uses based on the changes seen since the DSRSD Board of Directors called for voluntary water conservation in 2007. Changes in the factors are used in this UWMP.

3.2.1.2 Development of the Number of Future Accounts

DSRSD's computerized water and sewer billing system is based on accounts for service. The billing system divides services into major divisions: potable water, recycled water and sanitary sewer services. The billing system also categorizes the potable water and recycled water accounts into type of water delivered (potable or recycled), various account types (single family, condominium, general commercial, school, irrigation, etc.), and the location (by city) of the account. For the purposes of this UWMP, DSRSD correlated these various account types with the water sectors listed in the DWR Guidebook: single family, multifamily, commercial, industrial, institutional/governmental, landscape, agricultural, and other. DSRSD has no industrial or agricultural accounts. Water used by contractors during construction is sold through construction meters, which are classified in the commercial sector.

DSRSD tabulated and summed up the number of accounts in each UWMP water sector. Single family homes are individual accounts. However, the other categories do not have a one-to-one ratio for the number of accounts and the land use on the land parcel. For example, one account may serve several multifamily residences, or several accounts may be used for one institutional customer. DSRSD calculated the ratio of the number of accounts for the current water demand in each of the water sectors. The same ratio was applied to the future water demand to forecast the number of accounts in each water sector for any given year.

3.2.2 Lower Income Households

The projections shown in Table 3-5 include water use for single family and multifamily residential housing needed for low-income households²⁰, as identified in the City of Dublin's and the City of San Ramon's *Housing Elements*. The number of low-income households in Dougherty Valley was obtained from the *Gale Ranch October 14, 2010 Annual Compliance Report* by Shapell Homes, and *Windemere October 15, 2010 Annual Compliance Report* by Windemere BLC. These annual compliance reports, prepared by the two major developers in Dougherty Valley, provide status reports on construction activities and discuss future efforts. In Table 3-6, the water use projections are shown for low-income households. At buildout, water demand for low-income households will account for less than four percent (758 acre-foot) of the total potable water demand in DSRSD's service area.

Low Income Water Demands	2015	2020	2025	2030	2035
Single family residential	84	91	102	113	124
Multifamily residential	538	577	596	615	634
Total	622	668	698	728	758

3.2.3 Water Sales to Other Agencies

DSRSD's past, current and projected water sales to other water agencies are listed in Table 3-7. *DSRSD does not sell potable water to any other water agencies.* As discussed in Section 4.5, DSRSD produces recycled water at its Recycled Water Treatment Facilities (RWTF) located at its regional wastewater treatment plant. Recycled water is produced and supplied to DERWA, the wholesale recycled water provider to both DSRSD and EBMUD customers. Recycled water delivered to EBMUD is shown in this table.

Water Distributed	2005	2010	2015	2020	2025	2030	2035
Potable Water	0	0	0	0	0	0	0
Recycled Water to DERWA for EBMUD	20	1,248	2,086	3,048	3,048	3,048	3,048
Total	20	1,248	2,086	3,048	3,048	3,048	3,048

20. Defined as 80 percent of median income, adjusted for family size.

3.2.4 Other DSRSD Water Use and Losses

Additional DSRSD water use and losses are shown in Table 3-8. DSRSD does not purchase nor sell raw water. No water use is delivered for agricultural, saline water intrusion barriers, groundwater recharge, or conjunctive use because these uses are not practiced in DSRSD's service area. No such uses are planned in the future. DSRSD uses recycled water at its wastewater treatment plant for landscape irrigation and to replace evaporation at the facultative sludge lagoons. This recycled water use has been historically constant and is expected to remain constant.

Potable water system loss projections also are included in Table 3-8. Water from DSRSD's wholesale supplier, Zone 7, is metered at five existing turnouts as it enters DSRSD's potable water distribution system. DSRSD meters water deliveries to its customers. The difference between the metered water at the turnouts and the metered water deliveries is the water losses (or unaccounted water). DSRSD tracks unaccounted water closely; historically it has remained at less than seven percent of total Zone 7 water deliveries. DSRSD anticipates unaccounted water to comprise five percent of total Zone 7 water deliveries over its planning period.

Table 3-8. Additional DSRSD Water Uses and Losses (AFA)							
(DWR Table 10)							
Water Use¹	2005	2010	2015	2020	2025	2030	2035
Saline Barriers	0	0	0	0	0	0	0
Groundwater Recharge	0	0	0	0	0	0	0
Conjunctive use	0	0	0	0	0	0	0
Raw Water	0	0	0	0	0	0	0
Recycled Water ²	465	465	465	465	465	465	465
Potable Water System Losses	507	463	643	798	873	910	924
Total	972	928	1,108	1,263	1,338	1,375	1,389
¹ Any water accounted for in Table 3-1 are not included in this table.							
² Recycled water used for internal WWTP landscape and water to facultative sludge lagoons to replace evaporation.							

3.2.5 Total Water Demands

As discussed in Section 2.3, DSRSD's service area population is expected to increase by 50 percent between 2010 and its buildout in 2030 due to significant planned development. As shown in Table 3-9, DSRSD's total water demand is expected to increase by 113 percent between 2010 and 2035. The disparity between the two data parameters is because of a significant increase in the residential sector, and more significant increases in the commercial, institutional/governmental, and landscape irrigation sectors. Additionally, in 2010 water use is lower than historical water use despite increase in the number of accounts because of DSRSD customers' water conservation efforts. In 2007, DSRSD requested voluntary water conservation due to the drought situation and because of limited deliveries from the Delta. DSRSD customers responded with a 21% water use reduction per account. DSRSD's historical and projected population and water demands are illustrated in Figure 3-2. From 2006 to 2010, DSRSD service area population increased while its total water demand decreased. DSRSD anticipates some rebound in its customers' water conservation efforts and has incorporated the rebound in its projections. As shown in Figure 3-2, the projected water demand curves are parallel to the projected population curve.

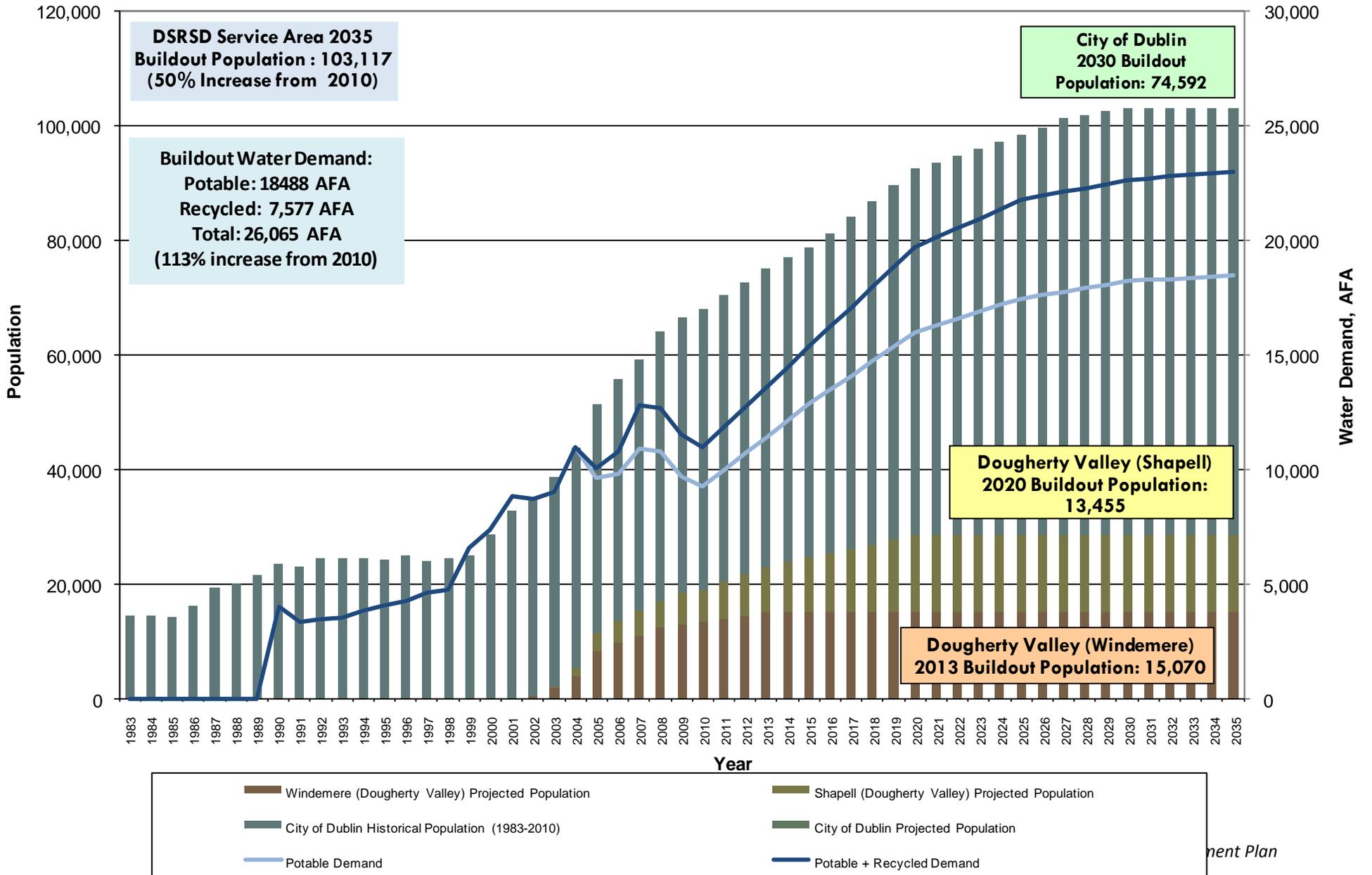


Recycled water is used for construction grading and dust control at the Fallon Village Project in eastern Dublin.

As shown in Table 3-9 and in Figure 3-2, DSRSD anticipates increases in its recycled water demands. A portion of the projected water demand, primarily landscape irrigation, will be met with recycled water. DSRSD's potable water demands will be met by water supply from Zone 7. DSRSD has shared these projections with Zone 7, its water wholesaler.

Table 3-9. DSRSD Total Water Demand Projections (AFA) (DWR Table 11)							
Water Use	2005*	2010*	2015	2020	2025	2030	2035
POTABLE WATER							
Total potable water deliveries (from Table 3-5)	9,627	8,801	12,209	15,167	16,584	17,294	17,564
Potable water sales to other water agencies (from Table 3-7)	0	0	0	0	0	0	0
Additional potable water uses and losses (from Table 3-8)	507	463	643	798	873	910	924
Total Potable Water Demand	10,134	9,264	12,851	15,965	17,457	18,204	18,488
RECYCLED WATER							
Total recycled water deliveries (from Table 3-5)	423	1,264	2,017	3,271	3,841	3,952	4,064
Recycled water sales to other water agencies (from Table 3-7)	20	1,248	2,086	3,048	3,048	3,048	3,048
Additional recycled water uses and losses (from Table 3-8)	465	465	465	465	465	465	465
Total Recycled Water Demand	908	2,977	4,568	6,784	7,354	7,465	7,577
Total	11,041	12,241	17,419	22,749	24,811	25,669	26,065
<i>*Actual Water Use</i>							

Figure 3-2. Historical and Projected Population and Water Demands



3.2.6 Consistency of Projected Water Demands to Interim and Urban Water Use Targets

DSRSD's projected potable gross water use is compared to the interim and urban water use targets determined in Section 3.1.2 in Table 3-10. As defined in Section 3.1.1, gross water use is the total volume of water entering DSRSD's potable water distribution system through five metered Zone 7 (DSRSD's sole water supplier) turnouts. The gross water use is, therefore, the total metered potable water deliveries to DSRSD's customers shown in Table 3-5, plus the potable water system losses in Table 3-8. As shown in Table 3-10, DSRSD's projections for 2015 and 2020 are at or below the water conservation targets.

Table 3-10. Comparison of Projected Potable Gross Water Use to Targets		
Parameter	Year	
	2015	2020
Projected Gross Water Use		
Total Potable Water Demand from Table 3-5 (AF)	12,209	15,167
Potable Water System Losses from Table 3-8 (AF)	643	798
Total Projected Gross Water Use (AF)	12,851	15,965
Total Projected Gross Water Use (gpd)	11,472,827	14,252,742
Projected Population	78,637	92,564
Projected Potable Water Demand (GPCD)	145.9	154.0
Target (GPCD)	183.4	163.0
Meets or Surpasses Water Conservation Target?	Yes	Yes

3.3 Projected Wholesale Water Demands

Water Code Section 10631(k)

DSRSD provides projected water demands to Zone 7 annually, covering the next five years (in monthly increments) for water delivery and scheduling purposes. DSRSD also provides longer term projections for the subsequent five years (in annual increments) as part of Zone 7's rate study process and UWMP preparation.

DSRSD prepared its potable water demand projections in mid-2010 for incorporation in Zone 7's 2010 UWMP, which was adopted on December 15, 2010. DSRSD's mid-2010 projections are included in Table 9.4 of Zone 7's UWMP.

During the preparation of its own UWMP, DSRSD revisited its projections. DSRSD received input from the cities and counties in its jurisdiction and developers with active development projects in its service area. DSRSD also reviewed and revised water projection factors applied to land uses to reflect the results of the District's water conservation programs and the Water Conservation Act of 2009. DSRSD has revised its potable water demand projections to reflect these factors.

The projections provided by DSRSD to Zone 7 are shown in Table 3-11. The first row of projections was included in Zone 7's 2010 UWMP. The second row of projections shows the revised projections determined during the preparation of this UWMP. These revised projections were provided to Zone 7 prior to adoption of this UWMP.

DSRSD's projections for recycled water demand are also shown in Table 3-11.

Table 3-11. DSRSD Demand Projections Provided to Wholesale Supplier (AFA) (DWR Table 12)							
Wholesaler	Contracted Volume	2010	2015	2020	2025	2030	2035
Zone 7 Water Agency ¹	No Limit ²	10,900	12,900	15,700	18,200	19,800	19,800
Zone 7 Water Agency ³	No Limit ²	9,300	12,900	16,000	17,500	18,300	18,500
DSRSD Recycled Water ⁴	No Limit	1,800	2,500	3,800	4,400	4,500	4,600
¹ Provided to Zone 7 Water Agency February 2, 2010. Incorporated in Zone 7's 2010 UWMP, Table 9-4, adopted December 15, 2010. Rounded up to the nearest 100 acre-ft.							
² DSRSD is required to provide Zone 7 five-year water demand projections annually.							
³ Revised DSRSD demand projections based on input from Cities and Counties in DSRSD Service Area during preparation of DSRSD's 2010 UWMP and implementation of Water Conservation Act requirements. Rounded up to the nearest 100 acre-ft.							
⁴ DSRSD treats recycled water at its RWTF. See Section 4.5 for discussion on recycled water production limitations, and efforts to expand recycled water production.							

3.4 Water Use Reduction Plan

Water Code Section 10608.26

DSRSD has a strong commitment to reducing potable water demand through conservation and use of recycled water. DSRSD has been a member of the California Urban Water Conservation Council (CUWCC) since 1991. It has pursued the development of a recycled water use program since the early 1990s.

To the fullest extent practical, DSRSD's water conservation program conforms to water conservation best management practices (BMP). In 2009, CUWCC restructured its BMPs to correlate to the demand management measures (DMMs) identified in the UWMP Act, Water Code Section 10631(f). DSRSD's current water conservation policies and programs are described in Section 6.

Additionally, DSRSD has been delivering recycled water since 1999. In 2010, it met more than 15 percent of its total water demand with recycled water. DSRSD's recycled water program, along with future projected use, is discussed in Section 4.5.

DSRSD's current water conservation and recycled water use has been so successful that its customers' daily per capita water use in 2010 is well below the 2020 urban water use target. However, much of the conservation achieved may be due to short-term changes in behavior. DSRSD anticipates a rebound in demand as customers revert to some of their pre-drought water use habits. Recycled water continues to be part of DSRSD's plan to permanently reduce potable water demand. As described below, DSRSD has developed strategies and a water conservation program to ensure that it maintains compliance with the Water Conservation Act of 2009.

3.4.1 Implementation Plan For Water Conservation Act Of 2009

DSRSD's plan to implement and maintain the requirements of the Water Conservation Act of 2009 are part of its Strategic Plan and its Water Conservation Program.

3.4.1.1 Strategic Plan

DSRSD's strategy for complying with the Water Conservation Act of 2009 is woven into its *Strategic Plan FY 2010-2014, Second Edition*, a top level planning document that sets a clear direction over all operational aspects of the agency's mission and serves as a framework for decision making. DSRSD developed a five year Strategic Plan in 2008 and reviews and updates it annually. The DSRSD Board adopted the latest version of the Plan on March 16, 2010; relevant sections are included in Appendix G of this UWMP. In this plan, DSRSD identifies current and future actions, activities, and planning that are needed for continued success in operations and management. These elements are incorporated in DSRSD's programs and policies.

Strategic Element #3 addresses management of water supply and recycled water. The District's overall objective is to ensure sustainable supply by prudently managing all water and wastewater resources and by pursuing and securing new water sources.

DSRSD objectives under Strategic Element #3.1, "Water Supply," are to ensure that adequate water supplies of acceptable quality are available for existing and future customers and that these supplies are delivered to customers in an environmentally friendly manner while achieving the water use reduction mandates imposed by the State

of California. DSRSD established the goals listed below and developed work plans associated with these goals.²¹

- Goal 3.1.1: Assess the water supply and ability to serve.
- Goal 3.1.2: Optimize amount of deliverable water.
- Goal 3.1.3: Secure new water supplies.
- Goal 3.1.4: Improve water quality.
- Goal 3.1.5: Permanently reduce potable water demand and move toward achieving the mandated 20 percent reduction in water use by 2020.

DSRSD objectives under Strategic Element #3.3, “Recycled Water,” is to maximize the beneficial use of recycled water resources, both within the District and throughout the region, in order to reduce demand for imported water and thereby increase the reliability of the overall water supply. DSRSD established the goals listed below and developed work plans associated with these goals.²²

- Goal 3.3.1: Secure additional wastewater from other sources.
- Goal 3.3.2: Extend recycled water service.
- Goal 3.3.3: Promote regional cooperation of recycled water.

During the preparation of this UWMP, DSRSD has been developing an update to its *Strategic Plan FY 2010-2014, Second Edition*. DSRSD plans to revise Goal 3.1.5 in light of its customers’ success in conserving water. Additionally, DSRSD plans to add the following goals to Strategic Elements #3.1 and #3.3.

- Goal 3.1.6: Provide adequate water supply.
- Goal 3.3.4: Seek financial assistance for recycled water projects.

The proposed revisions are shown in Appendix G.

As indicated by the goals, DSRSD is seeking to increase the overall reliability of its water systems and to lessen its reliance on imported water. When achieved, these goals will permanently reduce DSRSD’s potable water demand, expand DSRSD’s water supply, limit water supply reliance on the Delta, and meet the 2020 urban water use target.

3.4.1.2 Water Conservation Program

DSRSD’s water conservation program includes the DMMs detailed in Section 6. Its current conservation efforts and its water conservation rates were established to address

21. DSRSD, *Strategic Plan FY 2010-2014, Second Edition*, Updated March 2010, 20-23.

22. Ibid, p. 25-27.

varying hydrological conditions, including droughts. DSRSD plans to maintain its current efforts. However, DSRSD must meet the Water Conservation Act of 2009's mandate to achieve a permanent reduction of 20 percent per capita by 2020. Furthermore, DSRSD is directly affected by the condition of the Delta, from which DSRSD's water supply must be pumped. The Delta has continued to deteriorate and DSRSD's water supply has become even less reliable. Work is under way that is intended to correct the decline in the Delta ecosystem and that would restore water supply reliability to acceptable levels, but even the most optimistic water managers acknowledge that the time frame to implement such a fix is measured in decades. For all these reasons, it is important for DSRSD to investigate and implement, as appropriate, water conservation efforts that will lead to permanent water use reduction in its service area.

Currently, customers have reduced their water demand by 21.0 percent per account, compared to the average water use per account from July 2006 to June 2007, the 12 months prior to DSRSD's request for 10 percent voluntary water use reduction. In July 2009, DSRSD declared a Stage 1 water shortage and asked for 20 percent voluntary water use reduction in response to ongoing drought conditions and continued SWP pumping restrictions. Because of its customers' efforts, DSRSD currently meets and exceeds the 2020 urban water use target of 163 GPCD; DSRSD's 2010 potable water demand is 121 GPCD. If DSRSD were to back off its water conservation request at this time, much of the behavioral demand reductions that have been gained through the conservation efforts of the last few years may be negated. Accordingly, DSRSD plans to maintain the current level of conservation as the foundation of a comprehensive water conservation program and build on that foundation by investigating and implementing, as appropriate, permanent demand reduction programs that are shown to be effective and affordable.

DSRSD also plans to continue to connect future, planned development projects to recycled water in accordance with DSRSD Code Section 3.20.110, Duty to connect—Recycled water (included in Appendix H). With this combination, and prudent, incremental implementation of demand reduction programs listed below, DSRSD plans to meet and maintain its 2020 urban water use target through buildout.

WATER CONSERVATION PROGRAMS

History has shown that the public responds to every drought by using less water. However, history has also shown that usage rebounds after the drought is over. This indicates that much of the measured reduction during a drought is behavioral, not structural. It is unknown whether usage will again rebound after the most recent drought and how that will affect DSRSD's ability to continue meeting its 2020 urban water use target.

To address this uncertainty, DSRSD plans to continue to monitor the level of customer conservation and implement demand reduction measures in response to increasing demand. Even if conservation goals continue to be met, DSRSD will continue public outreach and education in order to minimize the effects of customer behavior on

maintaining the 2020 urban water use target. Various possible demand reduction programs are discussed below, including some current programs. The intent is to consider this initial list of programs if it becomes necessary to reduce potable water demand. DSRSD will critically evaluate each program to determine risk, cost, and potential reduction and prioritize implementation based on these three parameters.

The following programs are in progress.

- Recycled Water (structural system): DSRSD is seeking to expand its recycled water distribution system to established, developed areas of Dublin in accordance with Strategic Goal 3.3.3. DSRSD has included the Central Dublin Recycled Water Distribution and Retrofit Project in its Capital Improvement Program (CIP) as one of several projects created to meet this goal. This project is under design and staff is guardedly optimistic that a \$1 million Proposition 84 Implementation Grant will be awarded in June 2011. While the federal grant has not been approved, the state grant will allow 40 percent of the project to be built, reducing demand by 95 acre feet per year (AFA). The remainder of the project, when built, will reduce demand by an additional 145 AFA.

Several other recycled water distribution projects are planned in DSRSD's CIP. Staff recently submitted a planning grant application to the U.S. Bureau of Reclamation (USBR) to extend recycled water distribution to western Dublin and Camp Parks. The goal is to bring these projects in service by 2020. These projects represent another 245 AFA in demand reduction.

- Zone 7 Rebate Program (structural customer): Zone 7 currently supports a number of rebate programs that the District advertises and manages within its service area. The current programs are as follows:
 - High efficiency toilet replacement in residential, multifamily, and commercial locations
 - High efficiency urinal replacement in commercial locations
 - High efficiency clothes washing machine replacement in residential locations
 - Large landscape irrigation equipment replacement for audited sites
 - Commercial Ecoblue Cube program

District staff meets monthly with Zone 7 and the other retailers regarding water conservation. As a result of this collaboration, Zone 7 plans to launch the following new rebate programs on July 1, 2011:

- Residential and commercial turf replacement
 - Commercial and residential smart irrigation controllers
 - Direct install high efficiency toilets and urinals for commercial locations
 - Direct install high efficiency toilets for residential locations
 - Residential and commercial replacement of spray irrigation with drip systems
- Smart Irrigation Controllers (structural customer): The District has installed 17 smart irrigation controllers as a test program. While it will take some time to develop an

adequate use history to fully evaluate the success, a 9 percent decrease in water use was documented between 2009 and 2010. The benefits of this program probably outweigh the risks associated with customer influence and Zone 7 is planning to add smart irrigation controllers to the rebate program.

- Efficient Urinals (structural customer): District staff has been promoting one type of low water using urinal system as marketed by Ecoblue as a pilot test. Staff has concluded that it is a low cost way to save water. The Ecoblue Cube product, and potentially other similar products, also provides a strong conservation message on a regular basis to the male population. Zone 7 also provides rebates for high efficiency urinals.
- Landscape Audits (behavioral): District staff performs residential landscape audits when requested and Zone 7 funded two large landscape audits in the District service area. Residential landscape audits do not directly return a large water use reduction, but audits are excellent customer outreach opportunities for water conservation in general and should be undertaken to the limit of staff availability. The initial large landscape audits by Zone 7 were disappointing and Zone 7 is retooling the program for July 2011. Many of the large landscape irrigators already practice good demand management.

The following programs may be considered for implementation in the future.

- Turf Replacement (structural customer): Review of turf replacement programs in the Bay Area indicates that they are a reasonably cost-effective way to reduce water use. Replacement would require water wise planting, mulching, and drip irrigation. While there is some customer influence (the turf could be replaced by the owner at some future date), the risk is low enough to consider this structural reduction in water use. The risk can be partially mitigated through recorded deed restrictions. Zone 7 is planning to launch a residential and commercial turf replacement rebate on July 1, 2011.
- City Ordinances (structural system): The District may partner with the cities of Dublin and San Ramon to enact other water saving ordinances. One example is replacement of fixtures with high efficiency fixtures upon sale of property. Another is updating landscape ordinances to reduce demand, such as by minimizing turf, and requiring water wise planting, mulching, and drip irrigation.
- Water Budgets (behavioral): One BMP is to establish water budgets for landscape accounts. Customers would be surcharged for exceeding their water budget, and any funds collected could be used to support other conservation activities.
- Residential Recycled Irrigation (structural system): Irrigation of front landscaping with recycled water on residential lots can be permitted and is practiced in a few locations around the state. In general, unless recycled water is already adjacent to the

neighborhood, the demand may not be adequate to justify the capital investment. However, where it is available, it is cost effective. It may be much more cost effective in retrofit areas of the District with larger lots. The FYE 2012 CIP budget contains funds to develop a pilot single family recycled water program.

- Graywater (behavioral): Regulations and standards are in place for graywater systems and a number of companies now sell graywater systems for homes. These systems are very expensive for the quantity of water saved. The systems are maintained by the homeowner; if maintenance is not done properly, the systems can become a health risk. Because of the high risk and low economic return, staff recommends that the District not invest in graywater systems. However, the District should make available information on the proper installation and maintenance of graywater systems to any interested customers.
- Rain Water Capture (behavioral): A number of companies now install rain water capture systems. Given the local climate and cost of these systems, the unit cost of water is extremely high. These systems also need a high level of customer monitoring for proper operation. Because of the low economic return, staff recommends that the District not invest in rain water capture systems. However, the District should make available information regarding the proper installation and operation of rain water capture systems to any interested customers.

PUBLIC OUTREACH

Ongoing public outreach is critical to the water conservation program. The distribution of in-home water saving devices is primarily structural. Outreach is also beneficial in changing customer habits, which also become structural. Marketing the available rebate programs through outreach will also result in structural changes. Finally, an aggressive outreach program minimizes the risk of reduction measures being eroded over time by customer influence. The risk associated with both behavioral and customer influenced structural measures needs to be considered when allocating DSRSD funds to a particular measure. Even if conservation goals continue to be met, DSRSD will continue public outreach and education in order to minimize the effects of customer behavior on maintaining the 2020 urban water use target.

3.4.2 Economic Impacts

DSRSD's current water conservation program targets all customer sectors in various ways, and its recycled water program targets new development projects and high irrigation water uses. Funding for these programs is equitably allocated to those who benefit from them. In selecting new programs needed to maintain its 2020 urban water use target, DSRSD plans to continue its current policy of not placing a disproportionate burden on any customer sector.

Expanding DSRSD's recycled water distribution system to established areas of Dublin, which may reduce potable water demand by more than 500 AFA, is the most promising permanent reduction program. As discussed in Section 4.5.6, DSRSD plans to expand its

recycled water distribution system to connect high demand landscape irrigation systems in the established areas in Dublin, home to federal facilities and Alameda County properties. Because construction will occur in existing streets and site retrofits are required, cost will be higher than for new construction. DSRSD is seeking funding assistance from stakeholders in the region and the state. Funding from these stakeholders will reduce cost for DSRSD customers, who will get the benefit of increased water supply reliability and reduced dependence on imported water. Possible funding sources are described below.

- Federal grants: Through the U.S. Bureau of Reclamation, the federal government is a stakeholder in California's water supply, including the Delta. DSRSD is seeking Title XVI federal grant funding from the U.S. Bureau of Reclamation for the expansion of the recycled water distribution system and the recycled water treatment facilities. The federal grant is limited to 25 percent of the total cost of the project.
- State grant: DSRSD is seeking a Proposition 84 Round 1 Implementation Grant for the extension of recycled water to the central Dublin area. DSRSD must match 25 percent of the grant.
- Zone 7: Removing existing water demand from DSRSD's potable water system extends Zone 7's water supply. DSRSD is negotiating with Zone 7 to allow the resale of the water meter capacities for existing sites that are retrofitted with recycled water. Resale income would finance the onsite retrofit work that is not an allowed cost under a state or federal grant.
- Cities of Dublin and San Ramon: Economic development of the cities in DSRSD's service area depends on DSRSD's ability to provide adequate water supply. DSRSD may collaborate with the cities to fund its water conservation program by implementing a water demand offset fee. This fee would fund structural improvements, including recycled water retrofit projects. The fee would be related to the water demand imposed by a proposed development or be incorporated in its rates as a way to increase reliability for current customers. The fee would be related to and proportional with the extent of water conservation incorporated into development project plans.

As discussed in Section 4, DSRSD is limited by its contract with Zone 7 in seeking other supplies. DSRSD may, however, expand the use of recycled water. Thus, DSRSD has been aggressive in encouraging and requiring the use of recycled water. New developments are required to use recycled water in accordance with DSRSD Code Section 3.20.110, Duty to connect—Recycled water. By doing so, the development community benefits because potable water supplies are extended for their projects. To avoid undue burden to the development community, DSRSD has implemented financial incentives, which are discussed in detail in Section 4.5.7. By connecting to recycled water, new development applicants achieve significant financial savings. They need smaller potable water meters—thereby reducing DSRSD and Zone 7 water connection fees—and are not required to pay Zone 7 connection fees for their recycled water meters. Additionally, recycled water rates are currently 11 percent less than potable water rates, providing further incentive for new and existing customers to use recycled water.

3.4.3 Impact to Federal Facilities

The U.S. Army Reserve Parks Reserve Forces Training Area (Camp Parks) and the Federal Bureau of Prisons Federal Correctional Institution in Dublin (FCI) are part of DSRSD's service area and are adjacent to each other. These facilities are subject to Executive Orders 13423 and 13514.

Executive Order (EO) 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, was signed by President Bush on January 24, 2007. EO 13423 instructs Federal agencies to conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient, and sustainable manner. As part of EO 13423, a goal was set for water conservation.²³ The Department of Energy (DOE) prepared a supplemental guide for implementing EO 13423, *Establishing Baseline and Meeting Water Conservation Goals of Executive Order 13423* (see Appendix I). This guide was used as a reference for EO 13514.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, was signed by President Obama on October 5, 2009. This EO expands on the energy reduction and environmental performance requirements for federal agencies identified in EO 13423. EO 13514 laid out a numerical target of 26 percent total reduction of potable water use by 2020 (based on federal fiscal year 2007 baseline water use) and a numerical target of 20 percent reduction of total industrial, landscaping, and agricultural water use (based on federal fiscal year 2010 baseline water use). Furthermore, it called for the implementation of water management strategies including the use of water-efficient and low-flow fixtures.²⁴

Water conservation baselines and targets are based on annual potable water use divided by total gross square feet of the building or facility.²⁵ Federal agencies are encouraged to participate in local water utilities incentive programs.²⁶ Both the U.S. Army Reserve and the Federal Bureau of Prisons are eligible for various water conservation programs currently offered by DSRSD.

The Camp Parks area is currently undergoing redevelopment as funding is available. DSRSD and the U.S. Army Reserve representatives have coordinated in developing a master plan for the Camp Parks area, which includes planning for potable and recycled water facilities. Water demands for the buildout of Camp Parks facilities have been included in

23. Bush, George W., Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, January 24, 2007.

24. Obama, Barack, Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, October 5, 2009.

25. Department of Energy, Federal Energy Management Program, *Establishing Baseline and Meeting Water Conservation Goals of Executive Order 13423*, January 2008, p.4.

26. Ibid, p. 9.

DSRSD's water demand projections. DSRSD's estimated demand for Camp Parks is based on efficient water use as required by EO 13423 and EO 13514. Still, overall water demand for Camp Parks is expected to increase because of expansion in accordance with its master plan. To assist the U.S. Army Reserve in meeting its goal to reduce potable water demand, DSRSD plans to extend its recycled water distribution system to Camp Parks.

FCI water demand is also included in DSRSD projections. DSRSD does not expect significant expansion of the facilities and anticipates some reduction in FCI's water demand. Similarly, to assist FCI in meeting its goal to reduce potable water demand, DSRSD plans to extend its recycled water distribution system to FCI.

The schedule for the extension of recycled water facilities to Camp Parks and FCI and the retrofit of facilities are dependent on DSRSD's acquisition of funding as described above.

3.4.4 Overall Community Impact

Ensuring adequate water supply and reliability while minimizing cost for its customers is an important part of DSRSD's Strategic Plan. The communities that DSRSD serves have approved planned developments that will increase service area population by 50 percent between 2010 and 2030 (buildout), and increase total water demand by 113 percent between 2010 and 2035.

In response to the needs of approved planned development, DSRSD expanded its potable water and recycled water systems over the past 15 years. The expansion was funded by bonds and loans, to be paid by fees for future connections. If the water supply is inadequate, future planned developments will not be built and DSRSD will not receive adequate revenues from connection fees to retire the debt. Existing rate payers would end up paying for the debt if buildout as planned does not occur.

DSRSD recognizes this potential adverse economic impact to the communities it serves. By aggressively reducing potable water demand through conservation and use of recycled water, DSRSD is helping to minimize this risk of added economic impact on the communities it serves.



System Supplies

The sources of water available to DSRSD are described in this section, along with source limitations (physical or regulatory), water quality, and water exchange opportunities. The discussion covers the sources of water that DSRSD and Zone 7, DSRSD's water wholesaler, view as their water supply portfolio and planned future projects intended to increase water supply and reliability and improve water quality.

DSRSD receives its water supply from Zone 7. Under its agreement with Zone 7, DSRSD is limited in developing other water supply sources. DSRSD must defer to Zone 7 in maintaining its current water supplies and seeking water supply opportunities. Zone 7's discussion of water supply that was included in its UWMP (adopted December 15, 2010) is referenced in this UWMP, and applicable sections have been incorporated herein.

4.1 Water Sources

Water Code Section 10631(b)

DSRSD obtains its water supply from Zone 7. Zone 7 is a multi-purpose agency that oversees water-related issues in the Livermore-Amador Valley. Zone 7 is a State Water Project contractor that wholesales treated water to four retail water agencies (DSRSD, City of Livermore, City of Pleasanton, and California Water Service Company-Livermore), retails non-potable water supplies for irrigated agricultural use, retails treated water to several direct customers, provides and maintains flood control facilities, and manages groundwater and surface water supplies in its service area. DSRSD's water contract and supply from Zone 7 are discussed in Section 4.1.1. DSRSD has a groundwater pumping quota (GPQ) of 645 AFA in the Livermore Valley Main Groundwater Basin (Main Basin), which Zone 7 pumps on DSRSD's behalf as part of its water contract. This groundwater supply is discussed briefly in 4.1.3 and in detail in Section 4.2.

DSRSD's water supply is augmented with recycled water from its Recycled Water Treatment Facilities (RWTF). DSRSD owns and operates a wastewater treatment plant that treats wastewater from Dublin, South San Ramon, and Pleasanton. The wastewater treatment plant includes conventional secondary treatment facilities, as well as tertiary and advanced recycled water treatment facilities. The DSRSD-EBMUD Recycled Water Authority (DERWA) operates the San Ramon Valley Recycled Water Program (SRVRWP), a multi-phased project which distributes recycled water from the RWTF to portions of DSRSD's and EBMUD's service areas. DSRSD's recycled water production and distribution is discussed briefly in Section 4.1.4 and in detail in Section 4.5.

Water Supply Sources		2010	2015	2020	2025	2030	2035
Water purchased from:	Wholesaler supplied volume						
Zone 7 Water Agency ¹	Yes	8,655	12,255	15,355	16,855	17,655	17,855
Zone 7 Water Agency - Groundwater ²	Yes	645	645	645	645	645	645
DSRSD - Recycled Water ³	Yes	1,729	2,481	3,735	4,305	4,417	4,529
Total		11,029	15,381	19,735	21,805	22,717	23,029
¹ Volumes shown are actual 2010 purchase and projected purchases in the future. Volumes do not include DSRSD's GPQ.							
² DSRSD's GPQ, pumped by Zone 7 on DSRSD's behalf by contract.							
³ DSRSD 's RWTF provides recycled water supply and DERWA distributes recycled water to DSRSD and EBMUD. Recycled water supply listed herein is DSRSD's portion only.							

DSRSD's current and projected water supply from the above mentioned sources are shown in Table 4-1. DSRSD provided Zone 7 with a potable water demand request for 2010 and water demand projections for future years. The water supply sources are discussed in more detail in the following sections.

4.1.1 DSRSD Water Supply from Zone 7

Zone 7 and DSRSD entered into the current contract for a Municipal and Industrial Water Supply on August 23, 1994. The contract has a 30-year term and is intended to ensure an equitable, reliable, and high quality water service for DSRSD's customers. It improved the water supply for existing DSRSD customers and set the stage upon which DSRSD would be able to provide service to future customers. The current contract is expected to be renewed beyond 2024 with substantially similar provisions. Some of the key provisions of the contract include the following:

- **Service Area:** DSRSD has sole discretion to expand its service area. However, Zone 7 water cannot be used outside of the Zone 7 territory unless Zone 7 finds that providing water to such areas is in its best interest.

- **Water Supply:** DSRSD shall purchase from Zone 7 all water required by DSRSD for use within DSRSD's service area, except that DSRSD may extract groundwater per the contract provisions or obtain water from "Other Sources" as defined in the contract²⁷.
- **Water Quality:** Zone 7 will endeavor to provide water that is aesthetically acceptable to all retailers and will blend the different sources of water available to it within its operational capabilities so as to provide water of approximately equal quality to all customers.
- **Groundwater Pumping:** DSRSD's Groundwater Pumping Quota was maintained at 645 AFA of withdrawals from the Main Basin. Zone 7 pumps this groundwater from the Main Basin on DSRSD's behalf. Withdrawals from the fringe basin are unlimited and can be used at DSRSD's discretion.
- **Carryover of Pumping Quota:** The contract provides for a limited carryover of unused pumping quota from one year to another.
- **Transfer of Pumping Quota:** The four retailers served by Zone 7 can voluntarily transfer their pumping quotas between or among themselves.
- **Recycled Water:** Recycled water is considered to be an "Other Source" of water that DSRSD can use at will.
- **Delivery Schedule:** DSRSD shall submit in writing to Zone 7 a preliminary water delivery schedule indicating the anticipated quantity of treated water required by DSRSD during each month of the succeeding five calendar years and the anticipated peak day treated demand from Zone 7 for each such year. Zone 7 shall review such schedule, and after consultation with DSRSD, shall approve such schedule in a timely manner or make revisions as necessary to make such deliveries.

In February 2000, the contract was amended to expand DSRSD's service area to include the Dougherty Valley area and special provisions were added regarding supplying water to Dougherty Valley. A copy of the water supply contract and amendment is provided in Appendix E of this UWMP.

27. Water from "Other Sources" includes: a) water received for fire flow or fire storage requirements or other emergency purposes; b) water necessary to meet DSRSD's treated water needs as a result of Zone 7's non-compliance with state and federal drinking water requirements; c) water necessary to meet DSRSD's requirements should Zone 7 be unable to deliver the quantity of treated water necessary to satisfy the requirements of DSRSD; d) groundwater extracted within Zone 7's boundary, but outside the Main Basin, provided said extraction does not cause an adverse impact on the Main Basin; f) the source water is recycled water from DSRSD's or another contractor's treated wastewater.

4.1.2 Zone 7 Water Supply Sources

Zone 7 uses a combination of water supplies and water storage facilities to meet its customers' water demands. These include the following:

- Imported surface water from the State Water Project (SWP);
- Imported surface water transferred from the Byron Bethany Irrigation District (BBID);
- Local surface water runoff captured in Del Valle Reservoir;
- Local groundwater extracted from the Livermore Valley Groundwater Main Basin;
- Local storage in the Chain-of-Lakes; and
- Non-local groundwater storage in the Semitropic Water Storage District and Cawelo Water District.

Zone 7's water supply sources and storage options are discussed in detail in Section 5 of its 2010 UWMP. Sections 4.1.2.1 through 4.1.2.4 are excerpted from Zone 7's 2010 UWMP, Section 5.

4.1.2.1 Imported Surface Water Supply²⁸

Imported surface water is by far Zone 7's largest water source, providing over 80 percent of the treated water supplied to its customers on an annual basis. As described below, Zone 7 imports water from the State Water Project and surplus water from the Byron Bethany Irrigation District.

4.1.2.1.1 STATE WATER PROJECT

In November 1961, Zone 7 entered into a 75-year agreement with the Department of Water Resources (DWR) to receive water from the State Water Project (SWP). The SWP is the nation's largest publicly-built water storage and conveyance system and currently serves over 25 million people throughout California. SWP water originates within the Feather River watershed, is captured in and released from Lake Oroville, and flows through the Sacramento-San Joaquin Delta before it is conveyed by the South Bay Aqueduct (SBA) to Zone 7 or by the California Aqueduct to other south-of-Delta SWP contractors.

The SBA also delivers water to other water suppliers, namely Santa Clara Valley Water District and Alameda County Water District. Lake Del Valle is part of the SBA system and is used for storage of SWP water, as well as local runoff. At Zone 7, SWP water is used to meet treated water demands from municipal and industrial customers—both wholesale and retail—and untreated water demands from

28. Zone 7 Water Agency, *2010 Urban Water Management Plan*, Section 5.1, pages 5-1 – 5-3.

agricultural customers. It is also used to artificially recharge the local groundwater basin (as discussed below in Section 4.1.2.3 Local Storage) or to fill non-local storage.

Table A Allocation

The primary allocation agreement between DWR and its SWP contractors is recorded in Articles 12(a) and 18(a) of the agreements and is based on each contractor's annual water delivery request. Each contractor is limited to an annual contractual amount as specified in Article 6(c) and Table A. Zone 7's current agreement or contract with the DWR is for the delivery of up to 80,619 acre-feet annually (AFA). This contract expires in 2036 with an option to renew for 75 years. In practice, the actual amount of SWP water available to Zone 7 under the Table A allocation process varies from year to year due to hydrologic conditions, water demands of other contractors, SWP facility capacity, and environmental/regulatory requirements. In January 2010, DWR issued the *State Water Project Delivery Reliability Report for 2009*²⁹ that estimates a long-term average yield of 60 percent of Table A amounts, equivalent to 48,400 AFA for Zone 7. The SWP provides a median yield in a normal water year of 51,400 AFA (approximately 64 percent) to Zone 7.

As a SWP contractor, Zone 7 has the option to carry over unused Table A water from one year to the next when there is available storage in San Luis Reservoir. This "carryover" water is also called Article 12e and 56c water. Article 12e water must be taken by March 31 of the following year, but Article 56c water may be carried over as long as San Luis Reservoir storage is available. When possible, Zone 7 typically sets aside between 10,000 to 15,000 acre-feet (AF) of carryover water from its SWP Table A allocation.

Article 21 Water (Interruptible or Surplus Water)

Under Article 21 of Zone 7's contract with DWR, Zone 7 also has access to excess water supply from the SWP that is available only if: 1) it does not interfere with SWP operations or Table A allocations, 2) excess water is available in the Delta, and 3) it will not be stored in the SWP system. Per the *State Water Project Reliability Report for 2009*, the projected yield from Article 21 is very low and does not represent a significant water supply for Zone 7.

Article 56d Water (Turnback Pool Water)

Article 56d is a contract provision that allows SWP contractors with unused Table A water to sell their water to contractors who have water needs that exceed their allocation for the year. Historically, only a few SWP contractors have been in a

29. DWR, *State Water Project Delivery Reliability Report for 2009*, 2010, <http://baydeltaoffice.water.ca.gov/swpreliability/index.cfm>.

position to make Turnback Pool water available for purchase, particularly in normal or dry years. Zone 7 currently does not anticipate a significant amount of water supply to be available under Article 56d until there is a resolution to the current Delta crisis.

Yuba Accord

In 2008, Zone 7 entered into a contract with DWR to purchase additional water under the Lower Yuba River Accord (Yuba Accord). The contract expires in 2025. There are four different types (“Components”) of water available; Zone 7 has the option to purchase Components 2 and 3 water during drought conditions, and Component 4 water when the Yuba County Water Agency has determined that it has water supply available to sell.

The annual amount of water supply available to Zone 7 during dry years under the Yuba Accord is relatively small: 159 AF in 2009 and approximately 1,000 AF in 2010. Zone 7 estimates average and median yields of 250 AFA and 145 AFA, respectively, under the Yuba Accord.

4.1.2.1.2 BYRON BETHANY IRRIGATION DISTRICT

The Byron Bethany Irrigation District (BBID) diverts water from the Sacramento-San Joaquin Delta (Delta) pursuant to a “Notice of Appropriation of Water” dated May 18, 1914.³⁰ Zone 7 entered into a 15-year contract with BBID, renewable every five years, for a minimum yield of 2,000 AFA and up to 5,000 AFA of water supply under this appropriation. Water purchased from BBID is delivered to Zone 7 via the SBA. The current contract was recently extended through 2030, with an option to extend through 2039. While Zone 7 has had a contract with BBID since 1998, Zone 7 has historically requested less than the full amount available; this will change in the future.

4.1.2.2 Local Surface Water Runoff³¹

Zone 7, along with Alameda County Water District (ACWD), has water right permits to divert flows from Arroyo del Valle.³² Runoff from the Arroyo del Valle watershed above Lake Del Valle is stored in the lake, which is managed by DWR. As noted above, Lake Del Valle is also used to store imported surface water deliveries from the SWP. In late summer/early fall, DWR typically lowers lake levels in anticipation of runoff from winter

30. Mountain House Community Services District, *Mountain House Master Plan*, 1994.

31. Zone 7 Water Agency, *2010 Urban Water Management Plan*, Section 5.2, pages 5-3 – 5-4.

32. Permit 11319 (Application 17002).

storm events, and to provide flood control capacity. Water supply in Lake Del Valle is made available to Zone 7 via the SBA through operating agreements with DWR. Inflows to Lake Del Valle, after accounting for permit conditions, are equally divided between ACWD and Zone 7.

A review of historic runoff from Arroyo del Valle from 1913 to 2008³³ indicates that the median inflow available to Zone 7 is approximately 7,300 AFA.

4.1.2.3 Local Storage³⁴

Zone 7 has three options for local storage: storage in Lake Del Valle, storage in the local groundwater basin and, in the future, surface storage in the Chain of Lakes. Each of these is described below.

LAKE DEL VALLE

As described above, Lake Del Valle is used to store runoff from the Arroyo del Valle watershed above the lake and also to store imported surface water deliveries from the SWP.

LIVERMORE VALLEY GROUNDWATER BASIN

Zone 7 overlies the Livermore Valley Groundwater Basin (Main Basin); the Main Basin is the portion of the Livermore Valley Groundwater Basin that contains high-yielding aquifers and good quality groundwater.³⁵ (The Main Basin is not adjudicated.) It has an estimated storage capacity of about 254,000 AF. Detailed descriptions of the Main Basin are available in Zone 7's Groundwater Management Plan (GMP)³⁶, which was included as a CD attachment in Zone 7's 2010 UWMP. Chapter 6 of Zone 7's 2010 UWMP provides more details on the Main Basin and its operation. *DWR has not identified the Main Basin (DWR Basin No. 2-10) as either a basin in overdraft or a basin expected to be in overdraft.*

For Zone 7, the Basin is considered a storage facility and not a long-term water supply because Zone 7 does not have a groundwater-pumping quota, and only pumps groundwater it artificially recharges using its surface water supplies. As part of its conjunctive use program, Zone 7's policy is to maintain groundwater levels above historic lows in the Main Basin through artificial recharge of SWP water or locally-stored runoff from Arroyo del Valle. Currently, this is accomplished by releasing water to the

33. Note that actual data is only available for the following years: 1912 (partial)-1930, 1942, 1944-1952, 1958-present. Data gaps were filled using correlations with local rainfall.

34. Zone 7 Water Agency, *2010 Urban Water Management Plan*, Section 5.3, pages 5-3 - 5-4.

35. Zone 7 Water Agency, *Annual Report for the Groundwater Management Program – 2008 Water Year*. May 2009.

36. Jones & Stokes, 2005. *Groundwater Management Plan for Livermore-Amador Valley Groundwater Basin*.

arroyos for subsequent percolation and replenishment of the aquifers.³⁷ Zone 7 established historic lows based on the lowest measured groundwater elevations in various wells in the Main Basin; historic lows correspond to a groundwater storage volume of about 128,000 AF.³⁸ In general, the difference between water surface elevations when the Main Basin is full and water surface elevations when the Main Basin is at historic lows defines Zone 7's operational storage. Operational storage is about 126,000 AF based on Zone 7's experience operating the Main Basin.

CHAIN OF LAKES – LAKE I AND COPE LAKE

The Chain of Lakes refers to a series of ten mined out or active gravel quarry pits that have been or will be transferred to Zone 7 for water resources applications. These might include surface storage of stormwater or other local runoff, surface storage of water from the SWP, and/or use as groundwater recharge basins once mining has been completed. The ten quarry pits or lakes are named Cope Lake and Lakes A through I.

Although the Chain of Lakes will ultimately cover approximately 2,000 acres and store approximately 100,000 AF of water, Zone 7 currently only owns Cope Lake and Lake I. Zone 7 expects to take ownership of Lake H sometime within the next five years, while the remaining lakes will be transferred to Zone 7 over the next 20 years.

The Chain of Lakes will be used to store water supplies in wet years for later use during droughts, recharge the groundwater basin, capture additional flow from Arroyo del Valle, and help control flooding along the Arroyo Mocho and Arroyo Las Positas.

4.1.2.4 Non-Local Storage³⁹

In addition to local storage, Zone 7 also participates in the two non-local (also called “out of basin”) groundwater-banking programs described below; both banks are located in Kern County. Note that while these banking programs provide a water source during drought years, they represent water previously stored from Zone 7's surface water supplies during wet years. Therefore, they do not have a net contribution to Zone 7's water supply over the long-term and in fact result in some operational losses as described below. Furthermore, this banked water supply is only available when the SBA is operational.

SEMITROPIC WATER STORAGE DISTRICT

Zone 7 originally acquired a storage capacity of 65,000 AF in the Semitropic Water Storage District (Semitropic) groundwater banking program in 1998. Subsequently, Zone

37. Zone 7 Water Agency, *Annual Report for the Groundwater Management Program – 2008 Water Year*. May 2009.

38. Zone 7 Water Agency, *Annual Report for the Groundwater Management Program – 2009 Water Year*. May 2010.

39. Zone 7 Water Agency, *2010 Urban Water Management Plan*, Section 5.4, pages 5-5 - 5-6.

7 agreed to participate in Semitropic's Stored Water Recovery Unit, which increased pumpback capacity and allowed Zone 7 to contractually store an additional 13,000 AF. Zone 7 currently has a total of 78,000 AF of groundwater banking storage available to augment water supplies during drought conditions. During non-drought periods, Zone 7 can put up to 5,883 AFA into the Semitropic groundwater bank. Note that a 10 percent loss is associated with water put into Semitropic. During a drought year, Zone 7 has the ability to request up to 9,100 AF of pumpback and any amount between 0 to 8,645 AF of exchange water; the availability of exchange water depends on projected SWP allocation. Pumpback is water that is pumped out of the Semitropic aquifer and into the SWP system. Exchange water is water that is transferred between Zone 7 and Semitropic by adjusting the amounts of Table A water allocated between Zone 7 and Semitropic. The agreement is in effect through December 31, 2035.

CAWELO WATER DISTRICT

Similar to the arrangements with Semitropic, Zone 7 has 120,000 AF of groundwater banking storage available with the Cawelo Water District, as executed in an agreement in 2006. During non-drought periods, Zone 7 can put into storage up to 5,000 AFA in the bank.⁴⁰ During droughts, Zone 7 has the ability to request up to 10,000 AFA of pumpback (or exchange water) from Cawelo. The agreement is in effect through December 31, 2035.

4.1.2.5 Total Zone 7 Supply and Storage⁴¹

Zone 7's existing water supply sources and storage options are summarized in Tables 4-2 and Table 4-3. The quantities listed in Table 4-2 for water supply sources are median quantities in normal water years. Under dry, drought, or emergency conditions, the percentage distribution of sources used by Zone 7 to meet demands may shift; in particular, Zone 7 is likely to tap into water stored in the various storage facilities listed in Table 4-3.

In accordance with its reliability policy, which is included as Appendix J in this UWMP, Zone 7 continues to explore other options for acquiring additional future water supplies. These opportunities include water transfer opportunities, desalination, and other future projects. These future water supply opportunities are discussed in Sections 4.3, 4.4, and 4.6, respectively.

40. Zone 7 only gets storage credit for 50percent of the water provided to Cawelo. Per the existing contract, Zone 7 can normally only send 10,000 AF in any given year to Cawelo; therefore, the maximum contractual credit is 5,000 AFA (10,000 AF divided by 2).

41. Zone 7 Water Agency, *2010 Urban Water Management Plan*, Section 5.5, pages 5-6 – 5-7.

Table 4-2. Wholesale Supplies — Zone 7 Water Agency Existing and Planned Sources of Water Supply in Normal Years (AFA)¹ (DWR Table 17)						
Wholesale Sources	Contracted Volume	2015	2020	2025	2030	2035
Imported Surface Water						
SWP-Table A ²	80,619	51,400	51,400	51,400	51,400	51,400
SWP - Yuba Accord ³	No fixed cap	145	145	145	0	0
BBID ⁴	5,000	4,500	4,500	4,500	4,500	4,500
Local Runoff						
Arroyo Del Valle ⁵	30,000	7,100	7,100	7,100	7,100	7,100
Total Wholesale Water Supply		63,145	63,145	63,145	63,000	63,000
¹ Normal water years are defined as the median yield for Zone 7's 2010 UWMP. The table does not show groundwater pumping from the Main Basin as it represents water stored from the sources already listed above.						
² The amount listed here is the projected median yield, after correcting for carryover, in the 2009 State Water Project Delivery Reliability Report.						
³ The Yuba Accord contract ends in 2025.						
⁴ Byron Bethany Irrigation District. Historical deliveries cannot be used to develop water supply yields. A review of cumulative rainfall in 2009 and 2010 indicates that both years were at or above the historic median rainfall. Deliveries from this contract were 4,500 and 5,000 AF in 2009 and 2010, respectively. A yield of 4,500 AF was assumed available during normal water years.						
⁵ Zone 7, along with Alameda County Water District (ACWD), has a water right permit [Permit 11319 (Application 17002)] to divert runoff from Arroyo del Valle. Inflows to Lake Del Valle, after accounting for permit conditions, are equally divided between Zone 7 and ACWD. The two agencies' diversions cannot exceed 60,000 AFA. Planned water source volume is based on inflow date (actual and estimated) and existing diversion or facility limitations. The median supply available is approximately 7,100 AF.						

Table 4-3. Zone 7's Water Storage Options			
Storage Option		Water in Storage through April 2010¹ (AF)	Total Storage Capacity (AF)
Local	Lake Del Valle	4,900	7,500
	Main Basin	74,000	126,000
Non-Local	Semitropic	78,100	78,000
	Cawelo	5,000	120,000
Total Storage		162,000	331,500
¹ As presented in the May 2010 Annual Review of Sustainable Water Supply for Zone 7 Water Agency. Note that Zone 7 also has "carryover" water available in the SWP, amounting to 20,500 AF as of April 2010.			

4.1.3 DSRSD Groundwater Supply

Water Code Section 10631(b)

DSRSD does not itself extract groundwater as a water supply. In accordance with their water supply agreement, Zone 7 pumps DSRSD's groundwater supply from local storage, as described in Section 4.1.2.3.

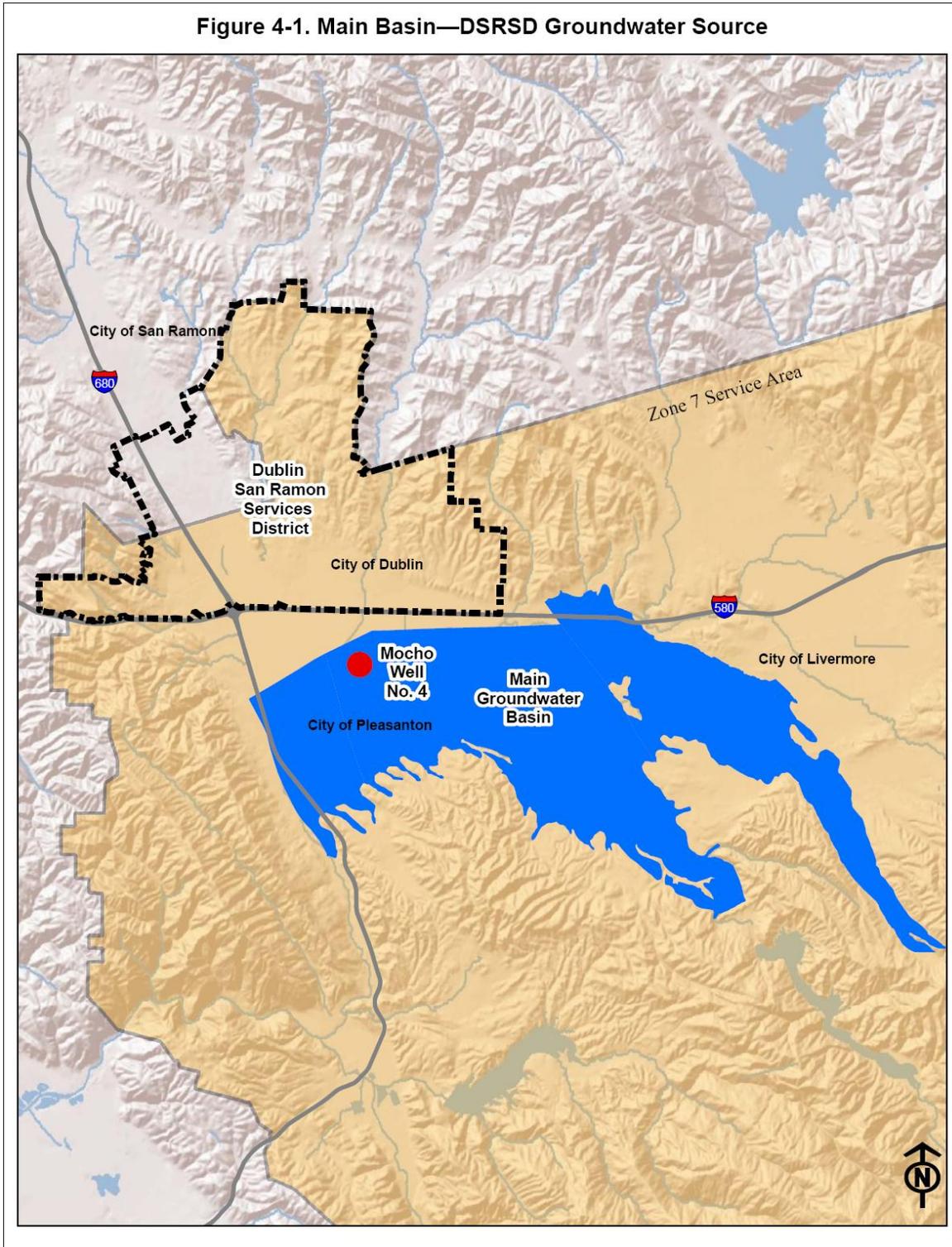
Zone 7 administers oversight of the local groundwater basin, the Livermore Valley Groundwater Basin as part of its Groundwater Management Program. The Main Basin is the portion of the Livermore Valley Groundwater Basin that has high yields and good quality groundwater. DSRSD, the California Water Service Company-Livermore, and the cities of Livermore and Pleasanton, through agreements with Zone 7, have mutually agreed to limit their extraction from the Main Basin to a combined quantity of approximately 7,200 AFA, about 54 percent of the long-term sustainable yield of the Main Basin. This agreement, along with Zone 7's other groundwater management activities, keeps the groundwater budget essentially in balance under average hydrologic conditions.⁴² Each of these retailers has a groundwater pumping quota (known as their GPQ). DSRSD's GPQ is 645 AFA. In accordance with its agreement with Zone 7, DSRSD may obtain groundwater in excess of its GPQ if it pays a recharge fee to Zone 7.

In Figure 4-1, the Main Basin and well field locations are shown relative to DSRSD's service area. Currently, the DSRSD groundwater supply (GPQ) is pumped by Zone 7 for DSRSD from a Zone 7 installed well in the Mocho well field, Mocho No. 4. This well was constructed on DSRSD property (previously Camp Parks property) under a 2002 agreement between DSRSD and Zone 7 whereby DSRSD provided Zone 7 with access, Zone 7 paid all of the costs for the well, pump and building, and DSRSD has the annual option of requesting that Zone 7 pump and provide DSRSD's GPQ at a cost of only power, chemical and some other incidental charges. Groundwater from Mocho No. 4 is blended with water from other Zone 7 water supplies and is delivered to DSRSD to meet its total water demand.

In addition to groundwater from the Main Basin, DSRSD may extract water above the 645 AFA Main Basin GPQ from areas outside the Main Basin (the fringe subbasin). Water can be pumped from the Fringe Basin as long as this groundwater extraction does not have adverse effects on the Main Basin. In the past, DSRSD pumped water from the fringe subbasin when it owned wells along Dublin Boulevard. However, pumping from the fringe subbasin was abandoned in 1980 due to water quality issues and pumping costs. Groundwater supply through Zone 7 is further discussed in Section 4.2.

42. DWR *Bulletin 118, Livermore Valley Groundwater Basin Description*, last updated February 27, 2004.

Figure 4-1. Main Basin—DSRSD Groundwater Source



4.1.4 Recycled Water Supply

DSRSD currently treats and distributes recycled water to water customers in its service area. Recycled water is produced from DSRSD's regional wastewater treatment facilities. DSRSD's water recycling efforts are discussed in detail in Section 4.5.

DSRSD began its recycled water program in the early 1990's by adopting Resolution No. 42-92 in August 1992. The resolution set priorities and policies for the use and promotion of recycled water service within and outside DSRSD's water service area. The policies were intended to assist DSRSD achieve the following objectives:

- Promote, produce, sell and deliver recycled water to retail and wholesale customers;
- Manage the San Ramon Valley Recycled Water Program on an equitable and self-supporting basis;
- Work with others to develop ordinances and guidelines to encourage the use of recycled water;
- Develop local regulations and standards to ensure the safe and beneficial use of recycled water; and
- Conduct public information and customer service programs to ensure that the public has an appropriate understanding of recycled water, including the benefits of using recycled water.

DSRSD then adopted the "Water Recycling Business Plan Framework" in 1993, to establish the DSRSD Recycled Water Enterprise. Since that time, recycled water has been an important part of water planning at DSRSD. In that same year, the City of Dublin certified an environmental impact report (EIR) for the *Eastern Dublin General Plan Amendment and Specific Plan*. The DSRSD service plan for eastern Dublin is predicated upon the use of recycled water for landscape irrigation as summarized in the EIR and subsequent annexation documentation. Potable water supply requests to Zone 7 by DSRSD for Eastern Dublin under the "Contract between Zone 7 and DSRSD for a Municipal & Industrial Water Supply," are the net of the eastern Dublin total water demands less the recycled water to be provided by DSRSD.

DSRSD and EBMUD formed a joint powers authority, the DSRSD-EBMUD Recycled Water Authority (DERWA), in 1995. DERWA's mission is to provide a safe, reliable, and consistent supply of recycled water, and to maximize the amount of recycled water delivered for non-potable use. DERWA operates the San Ramon Valley Recycled Water Program (SRVRWP), a multi-phased project to supply recycled water from DSRSD's Recycled Water Treatment Facility (RWTF) to portions of DSRSD's and EBMUD's service areas. Additional discussion of DERWA is provided in Section 4.5.

In 1995, DSRSD also committed to providing water to Dougherty Valley. The DSRSD service plan for Dougherty Valley is also predicated upon the use of recycled water for landscape irrigation. The amount of potable water purchased for Dougherty Valley is the net

of the Dougherty Valley total water demands less the recycled water to be provided by DSRSD.

In April 1998, DSRSD adopted Ordinance No. 280 which established a Recycled Water Use Zone within DSRSD's service area, consisting of all areas then receiving potable water services and those additional areas designated for such service. In April 2004, this ordinance was repealed and replaced by Ordinance No. 301 which formally established the rules and regulations governing the use of recycled water within DSRSD's service area. See Section 4.5 for additional discussion of this ordinance. A copy of Ordinance No. 301 is provided in Appendix K. In November 2010, when DSRSD recodified its code, DSRSD incorporated Ordinance No. 301 into the DSRSD Code and added DSRSD Code Section 3.20.110, Duty to connect—Recycled water (included in Appendix H), which requires that new development in DSRSD's water service area connect to recycled water for appropriate irrigation uses.

In 2005, DSRSD adopted a Water Master Plan that established Board policy as to the quantity of recycled water the District was looking to develop and deliver to customers within the District's water service area. The total quantity of recycled water that DSRSD planned to deliver through buildout was estimated to be approximately 3,700 AFA (or 3.3 million gallons per day, mgd).

4.2 Groundwater

Water Code Section 10631(b)

As stated in Section 4.1.1, DSRSD's water supply contract with Zone 7 provides that DSRSD shall purchase from Zone 7 all water required by DSRSD for use within DSRSD's service area, except that DSRSD may extract groundwater per the contract provisions or obtain water from "Other Sources" as defined in the contract. ***DSRSD does not itself extract groundwater as a water supply.*** By contract, Zone 7 conducts this groundwater pumping operation as part of providing water supply services to DSRSD. This groundwater supply is then blended with water from Zone 7's other water supply sources and delivered to DSRSD.

The volume of groundwater pumped by Zone 7 for DSRSD from 2006 to 2010 is shown in Table 4-4. The volume of groundwater projected to be pumped by Zone 7 for future DSRSD water supply is shown in Table 4-5. Historically, DSRSD's groundwater supply demand has been constant.

Basin name	Metered or Unmetered	2006	2007	2008	2009	2010
Main Basin, Livermore Valley	Metered	645	645	645	645	645
Total groundwater pumped		645	645	645	645	645
Groundwater as a percent of total water supply		5.7%	4.8%	4.8%	5.3%	5.5%

Basin name(s)	2015	2020	2025	2030	2035
Main Basin, Livermore Valley	645	645	645	645	645
Total groundwater pumped	645	645	645	645	645
Percent of total water supply	4.19%	3.27%	2.96%	2.84%	2.80%

In accordance with their water supply contract, DSRSD defers to Zone 7 in maintaining current groundwater resources and in developing future groundwater resources. Zone 7 administers oversight of the local groundwater basin, the Livermore Valley Groundwater Basin. The Main Basin portion contains high-yielding aquifers and good quality groundwater. Zone 7 uses the Main Basin as a storage facility and not as a supply. ***Zone 7 does not have a groundwater pumping quota and it can only pump groundwater it has recharged from its other supplies.*** The groundwater aquifer is naturally and artificially recharged using surface water, as described in Section 4.1.2.

Section 6 of Zone 7's 2010 UWMP provides more details on the Main Basin and its operation. The discussions below regarding the management of the local groundwater basin are directly excerpted from portions of Zone 7's 2010 UWMP, Section 6. Zone 7 submitted its *Groundwater Management Plan* (GMP) as part of its UWMP.

4.2.1 The Livermore Valley Groundwater Basin⁴³

Water Code Section 10631(b)(2)

As defined in DWR Bulletin 118 update 2003 (*California's Groundwater*), the Livermore Valley Groundwater Basin (DWR Basin 2-10) extends from the Pleasanton Ridge east to the Altamont Hills and from the Livermore Uplands north to the Tassajara Uplands. ***DWR has not identified Basin 2-10 as either in overdraft or expected to be in overdraft.*** Surface drainage features include Arroyo del Valle, Arroyo Mocho, and Arroyo Las Positas as principal streams, with Alamo Creek, South San Ramon Creek, and Tassajara Creek as minor streams. All streams converge on the west side of the basin to form Arroyo de la Laguna, flowing south and joining Alameda Creek in Sunol Valley, and ultimately draining to the San Francisco Bay. Some geologic structures restrict the lateral movement of groundwater, but the general groundwater gradient is from east to west, towards Arroyo de la Laguna, and from north to south along South San Ramon Creek and Arroyo de la Laguna.

The entire floor of the Livermore Valley and portions of the upland areas on all sides of the valley overlie groundwater-bearing materials. The materials are mostly continental deposits from alluvial fans, outwash plains, and lakes. They include valley-fill materials, the Livermore Formation, and the Tassajara Formation. Under most conditions, the valley-fill and Livermore Formation yield adequate to large quantities of groundwater to all types of wells, with the larger supply wells being located in the Main Basin. The Main Basin is composed of the Castle, Bernal, Amador, and Mocho 2 sub-basins.

4.2.2 Groundwater Quantity⁴⁴

Zone 7 routinely monitors groundwater levels within the Main Basin. Two independent methods are used to estimate groundwater storage: 1) Hydrologic Inventory and 2) Nodal Groundwater Elevation. The Main Basin is estimated to have a total storage capacity of 254,000 acre-feet (AF), of which approximately 126,000 AF are available for Zone 7 operational storage. Zone 7's goal is maintain 128,000 AF of groundwater at all times, as discussed below.

4.2.2.1 Artificial Recharge

Before the construction of the State Water Project (SWP) in the early 1960s, groundwater was the sole water source for the Livermore-Amador Valley. This resource has gone through several periods of extended withdrawal and subsequent recovery. In the 1960s, when approximately 110,000 AF of groundwater was extracted, the Main Basin reached its historic low of 128,000 AF. The Main Basin was allowed to recover from 1962 to 1983. It was during this era that Zone 7 first conducted a program of groundwater

43. Zone 7 Water Agency, *2010 Urban Water Management Plan*, Section 6.1, page 6-1.

44. *Ibid*, Section 6.2, page 6-2 – 6-5.

replenishment by recharging imported surface water via its streams (“in-stream recharge”) for storage in the Main Basin, began supplying treated surface water to customers to augment groundwater supplies, and began regulating municipal pumping by contractually establishing GPQ as discussed further below.

Zone 7’s operational policy is to maintain the balance between the combination of natural and artificial recharge and withdrawal. This ensures that groundwater levels do not drop below the historic level of 128,000 AF.

4.2.2.2 Current Sustainable Yield and Groundwater Pumping Quotas

Long-term natural sustainable yield is contractually defined as the average amount of groundwater annually replenished by natural recharge in the Main Basin—through percolation of rainfall, natural stream flow, and irrigation waters, and inflow of subsurface waters—and which can therefore be pumped without lowering the long-term average groundwater volume in storage. In contrast, “artificial recharge” is the aquifer replenishment that occurs from artificially induced or enhanced stream flow, as described in the previous section. With artificial recharge, more groundwater can be sustainably extracted from the Main Basin each year.

The natural sustainable yield of the Main Basin has been determined to be about 13,400 AFA, which is 10-11 percent of the total estimated useable groundwater storage. This long-term natural sustainable yield is based on over a century of hydrologic records and projections of future recharge conditions. Based on this sustainable yield value, California Water Service Company [Livermore District] (Cal Water), Dublin San Ramon Services District (DSRSD), the City of Livermore (Livermore), and the City of Pleasanton (Pleasanton) (collectively referred to as the Retailers) are permitted to pump 7,245 AFA. Each retailer has an established “Groundwater Pumping Quota” (GPQ), formerly referred to as the “Independent Quota” in the original Municipal and Industrial water supply contract between Zone 7 and each retailer⁴⁵. Pleasanton and Cal Water pump their own GPQ; they are also permitted to pump groundwater in excess of their GPQ under a recharge fee paid to Zone 7. This fee covers the cost of importing and recharging additional water into the Main Basin. Zone 7 pumps DSRSD’s GPQ.

Zone 7’s groundwater extraction for its treated water system does not use the natural sustainable yield from the Main Basin; instead, ***Zone 7 pumps only water that has been recharged as part of its artificial recharge program using its surface water supplies.*** During high demands, groundwater is used to supplement surface water supply delivered via the South Bay Aqueduct (SBA). Groundwater is also used when the SBA is out of service due to maintenance and improvements or when Zone 7’s surface water treatment plants are operating under reduced capacity due to construction, repairs, etc. Finally,

45. The GPQs in acre-feet are as follows: Cal Water – 3,069, DSRSD – 645, Livermore – 31, and Pleasanton – 3,500.

Zone 7 taps into its stored groundwater under emergency or drought conditions, when there may be insufficient surface water supply available. Zone 7 also pumps groundwater out of the Main Basin during normal water years to help reduce the salt loading in the Main Basin. As discussed in Section 4.2.3, to achieve additional salt removal, a demineralization facility has been in operation starting in 2009. Zone 7 plans to recharge 9,200 acre-feet annually on average, which means that Zone 7 can pump an equivalent 9,200 acre-feet annually on average from the Main Basin.

4.2.3 Groundwater Quality⁴⁶

The Main Basin is characterized by relatively good quality groundwater that meets all state and federal drinking water standards; groundwater is chloraminated simply to match the disinfectant residual in the distribution system. However, there has been a slow degradation of groundwater quality as evidenced by rising Total Dissolved Solids (TDS) and hardness levels over the last few decades. To address this problem, Zone 7 developed a Salt Management Plan (SMP)⁴⁷, which was approved by the Regional Water Quality Control Board in 2004 as a condition of the Master Waste Reuse Permit (for more details, see Chapter 14 of Zone 7's 2010 UWMP) and incorporated into Zone 7's GMP in 2005.

Zone 7 implements a wastewater and recycled water monitoring program as part of the GMP. In 2009, 20 percent of the recycled water produced in the service area was applied over the Main Basin⁴⁸. Nitrates and salinity have historically been the primary water quality parameters of concern in recycled water, but nitrates have become less of a concern since 1995 when the City of Livermore Water Reclamation Plant—which, along with Dublin San Ramon Services District, is one of the two largest wastewater agencies in the area—stopped nitrifying its effluent. Salinity levels are being addressed through demineralization as described later in this section. In addition to recycled water application over the Main Basin, there are also approximately 80 septic tanks over the Main Basin that discharge their settled effluent but their use is not monitored.

To further manage the water quality in the Main Basin, Zone 7 also runs a Toxic Site Surveillance Program, documenting and tracking sites across the groundwater basin that pose a potential threat to drinking water supplies. Zone 7 works closely with the Regional Water Quality Control Board and Alameda County Environmental Health in these efforts. In general, there are two types of contamination threatening the Livermore Valley Groundwater Basin: petroleum-based fuel products and industrial chemical contaminants. In 2009, Zone 7 tracked the progress of 81 active sites where groundwater contamination has been detected or contamination is threatening groundwater. Eleven of the sites are designated as high priority because of their proximity to drinking water supply wells (none of Zone 7's wells is affected) and occurrence in the Main Basin. Affected water supply well owners are employing

46. Zone 7 Water Agency, *2010 Urban Water Management Plan*, Section 6.3, page 6-8.

47. Zone 7 Water Agency, *Salt Management Plan*, 2004.

48. Zone 7 Water Agency, *Groundwater Management Program – 2009 Water Year*, 2010.

granular activated carbon to remove contamination prior to water consumption. More details on the affected sites and their remediation can be found in the *Annual Report for the Groundwater Management Program – 2009 Water Year*⁴⁹.

As part of its efforts to address salinity in the Main Basin, Zone 7 completed construction of a wellhead demineralization facility in 2009. Employing a reverse osmosis membrane-based treatment system, this facility simultaneously allows for the removal and export of concentrated minerals or salts⁵⁰ from the Main Basin and the delivery of treated water with reduced TDS and hardness levels to Zone 7's customers.

4.2.4 Future Opportunities

Zone 7 plans to augment its current groundwater in-stream recharge capacity with off-stream recharge using the future Chain of Lakes facilities. Reclaimed gravel quarries located in the central portion of the Livermore-Amador Valley are to be used for capturing additional local runoff and imported surface water, and recharging the Main Basin. Ultimately, the Chain of Lakes could cover 2,000 acres and store approximately 100,000 AF of water as surface water. Zone 7 would store excess surface water during wet and/or normal years and use those supplies during dry years, thereby increasing annual groundwater replenishment capability.

Although full implementation of this plan would not occur until after 2030, there would likely be opportunities to use individual gravel quarries or lakes as they become available. The first of these, Lake I, located off Arroyo Mocho, was dedicated to Zone 7 in June 2003. Zone 7 expects to take ownership of Lake H within the next five years.

In addition to Lake I, Zone 7 also acquired Cope Lake, a 220-acre former mining pit that was used as a settling pond by the gravel operators. Although largely sealed from the aquifer, and not a part of the Chain of Lakes, Cope Lake does offer some potential for other uses such as flood detention, settling, and water storage.⁵¹

Additionally, Zone 7 has developed options to increase groundwater recharge capacity. At the time of preparation of this UWMP, Zone 7 is preparing its *2011 Water Supply Evaluation* (WSE) to be released mid-2011. In the WSE, Zone 7 has evaluated an extensive list of potential water supply options. A copy of this list is included as Appendix L. In addition to options in expanding its water supply, Zone 7 has developed options to increase groundwater recharge capacity as shown on Page 6 of Appendix L.⁵²

49. Ibid.

50. The brine concentrate resulting from the treatment system is exported to the San Francisco Bay via a regional wastewater export pipeline.

51. Zone 7 Water Agency, *2010 Urban Water Management Plan*, Section 6.2.1, page 6-3.

52. Zone 7 Water Agency, *2011 Water Supply Evaluation*, (2011, in progress), Table x.

4.3 Water Transfer Opportunities

Water Code Section 10631(d)

DSRSD does not plan to pursue water exchanges because, by contract with Zone 7, DSRSD may not pursue water transfers. In Table 4-6, DSRSD's opportunities for planned or potential future water exchanges are reflected. DSRSD defers to Zone 7 in maintaining its current water transfer supplies and seeking water transfer opportunities.

Table 4-6. DSRSD Planned or Proposed Water Transfer Agreements (AFA) (DWR Table 20)			
Transfer agency	Transfer or exchange	Short term or long term	Proposed Volume
None	None	NA	0
Total	0	0	0

Zone 7's existing water transfer supply sources and non-local storage options are discussed in detail in Section 8 of Zone 7's 2010 UWMP. Zone 7's imported water supply sources are primarily based on existing water transfer agreements; these sources are described in Section 4.1.2. These sources include SWP Table A, Byron Bethany Irrigation District long term water transfer contact, and Yuba Accord water transfer.

In its 2011 WSE, Zone 7 considers water transfer opportunities as part of its potential water supply options—included in this UWMP as Appendix L, Pages 1 and 2.⁵³ One opportunity is a long-term or permanent transfer of non-State Water Project water. This transfer opportunity is discussed in Section 11.2.2 of Zone 7's 2010 UWMP. Zone 7 is investigating possible opportunities for permanent water transfers or long-term leases from a non-State Water Project (SWP) contractor. This transaction would be similar to the contract Zone 7 holds with the Byron Bethany Irrigation District, which is a 20-year contract, renewable every five years up to a total of 30 years. However, unlike the water from the BBID contract, which is delivered through the South Bay Aqueduct, Zone 7 would seek water that can be delivered via a new intertie with another major water agency. This would have the added benefit of diversifying Zone 7's portfolio.⁵⁴

53. Zone 7 Water Agency, WSE, Appendix E.

54. Zone 7 Water Agency, *2010 Urban Water Management Plan*, Section 11.2.2, page 11-3.

4.4 Desalinated Water Opportunities

Water Code Section 10631(i)

DSRSD does not plan to pursue opportunities to develop desalinated water supplies because, by contract with Zone 7, DSRSD may not do so. DSRSD defers to Zone 7 in pursuing desalinated water opportunities.

Zone 7 is exploring the feasibility of a regional desalination project in partnership with other San Francisco Bay Area water agencies, as described in Section 12 of Zone 7's 2010 UWMP. Zone 7 joined the Bay Area Regional Desalination Project (BARDP), a consortium of five agencies, in June 2010. As a partner in the BARDP, Zone 7 is evaluating the feasibility of receiving up to 5,600 AF every year, or only during normal/wet years.

Among other benefits, desalinated water provides a drought-resistant supply to Zone 7 and diversifying Zone 7's water supply portfolio, thereby, increasing system reliability—a significant benefit. The most likely scenario is that water would be wheeled through EBMUD's distribution system; Zone 7 would receive treated water at a proposed intake in the western part of its service area.⁵⁵

4.5 Recycled Water

Water Code Sections 10633(a-g)

DSRSD currently produces and distributes recycled water in its service area, as described in Section 4.1.4. DSRSD owns and operates a recycled water treatment facility (RWTF) at its wastewater treatment plant and participates with EBMUD in a joint powers authority, DERWA, that operates the San Ramon Valley Recycled Water Program (SRVRWP). DSRSD's recycled water program is discussed in further detail below.

4.5.1 Coordination of Recycled Water Use in DSRSD Service Area

Water Code Section 10633

In the early 1990's, DSRSD, the City of Livermore, and Zone 7 undertook a Tri-Valley recycled water study and conducted a series of public workshops as a part of that process. As a result of that effort, the State Water Resources Control Board (SWRCB) issued a Master Water Recycling Permit (Order No. 93-159) to DSRSD, Livermore, and Zone 7 in December 1993. The permit established the requirements for recycled water irrigation, groundwater recharge, and other Title 22 approved projects.

55. Ibid, Section 11.2.3, page 11-3.

Recycled water is tertiary-treated wastewater and is a very reliable supply; however, the use of recycled water was discouraged in the past due to the potential of salt buildup in the Main Basin. Zone 7's Salt Management Plan, developed in 2004, now provides tools and strategies for preventing salt buildup in the Main Basin. Zone 7 reviews DSRSD's recycled water plans from two perspectives—water supply management and groundwater protection. At this time, Zone 7 is preparing to update its Groundwater Management Plan, which will also include an update of the Salt Management Plan.

Wastewater from Dublin, Pleasanton and the southern portion of San Ramon are treated at DSRSD's wastewater treatment plant. A portion of the secondary effluent is routed to DSRSD's RWTF for tertiary treatment and distribution through the DERWA facilities. A portion of the recycled water is distributed by DSRSD to non-potable users in Dublin, San Ramon and Contra Costa County; the remainder is distributed to EBMUD customers in the San Ramon Valley. DSRSD coordinates with the planning departments in the cities of Dublin and San Ramon, Alameda and Contra Costa counties, and the U.S. Army Reserve to ensure that recycled water is used where it is available. DSRSD and EBMUD also work together to manage recycled water supply demands.

Since 1999, DSRSD has distributed recycled water for landscape irrigation and construction uses in eastern Dublin and Dougherty Valley as those areas developed. DSRSD monitors recycled water uses and files reports with regulatory agencies: the California Department of Public Health (DPH) and the San Francisco Bay Regional Water Quality Control Board (RWQCB), in conformance with DSRSD's General Water Reuse Order No. 96-011 (General Order). Current and potential uses of recycled water in DSRSD's service area are further detailed in Section 4.5.6 and Section 5.

4.5.2 Wastewater Collection, Treatment, and Disposal

Water Code Section 10633 (a) and 10633 (b)

DSRSD owns and operates a regional wastewater treatment plant (WWTP), which treats wastewater from Dublin, South San Ramon, and Pleasanton. The wastewater treatment plant includes conventional secondary treatment facilities, as well as tertiary and advanced recycled water treatment facilities.

Conventional secondary wastewater treatment facilities include primary sedimentation, activated sludge secondary treatment, secondary sedimentation, chlorine disinfection, and effluent pumping. The secondary treatment facilities currently have an average dry weather flow (ADWF) capacity of 17.0 mgd. At projected buildout, the secondary facilities will have an ADWF capacity of 20.7 mgd; 10.4 mgd of this influent is projected to originate from the DSRSD service area. The remaining 10.3 mgd of influent is projected to originate from Pleasanton. DSRSD treats Pleasanton influent by contract.

In DSRSD's RWTF, a portion of the secondary effluent from the WWTP is treated further to produce Title 22 disinfected tertiary recycled water. During the dry season when recycled

water demands are high, recycled water is produced using sand filtration and ultraviolet disinfection facilities (SFUV). The SFUV facilities have a treatment capacity of 9.7 mgd.

DSRSD's RWTF also includes microfiltration and ultraviolet disinfection facilities (MFUV) with a treatment capacity of 3.0 mgd. These facilities currently act as backup facilities for the SFUV facilities and are used during times of low and high demands. The SFUV facilities have less flexible startup and shutdown requirements, whereas the MFUV facilities have a wide turndown range; therefore, they are used during low flow periods. During high demand periods, the MFUV and SFUV facilities may be operated in parallel to meet demand. The MFUV facilities also provide redundancy, increasing reliability when units in the SFUV facilities are undergoing maintenance, repair, or replacement.⁵⁶

DSRSD's MFUV facilities were designed to produce recycled water suitable for both non-potable reuse and groundwater recharge, a potential future use that would replenish and improve local groundwater quality. MFUV construction was completed in 1999. The MFUV project is currently producing recycled water that meets California Title 22 requirements for unrestricted reuse and has received approval for groundwater recharge from the DPH and RWQCB. Legal action by outside parties resulted in a requirement that the RWQCB reconsider permit approval. However, DSRSD has determined that it will not ask for RWQCB reconsideration or proceed with the injection of highly treated recycled water into the groundwater basin at this time.



Water operators inspect the UV filtration system.

56. Whitley Burchett & Associates, *2005 Wastewater Treatment Plant Master Plan Update*, Dec. 2005, p. 11-3.

The historical, current, and projected volumes of wastewater treated at DSRSD's WWTP and RWTF are shown in Table 4-7. Total wastewater volume includes influent from DSRSD's service area and the City of Pleasanton. Total recycled water volume includes DERWA deliveries to DSRSD and EBMUD. Wastewater from DSRSD's service area and recycled water deliveries to DSRSD's water service area also are shown.

Table 4-7. Volumes of Wastewater Collected & Treated and Recycled Water							
Treated (AFA) (DWR Table 21)							
Type of Water	2005*	2010*	2015	2020	2025	2030	2035
Wastewater Treated in DSRSD's WWTP (DSRSD and Pleasanton)	13,576	16,309	18,807	20,633	21,664	22,112	22,336
Volume Treated per Title 22 Disinfected Tertiary Recycled Water (DERWA Deliveries and WWTP Internal Use)	908	2,977	4,567	6,783	7,353	7,465	7,577
Wastewater Collected & Treated in DSRSD Service Area Only	6,239	7,292	7,875	10,204	11,370	11,885	11,913
Volume Disinfected Tertiary Recycled Water Distributed in DSRSD Service Area	888	1,729	2,481	3,735	4,305	4,417	4,529
<i>*Actual</i>							

Wastewater that is not recycled is discharged into the San Francisco Bay through a pipeline owned by the Livermore-Amador Valley Water Management Agency (LAVWMA), a joint powers agency created in 1974 by DSRSD and the cities of Livermore and Pleasanton. Operations began in September 1979, with an expansion in 2005, for a current design capacity of 41.2 mgd. The wastewater is conveyed via a 16-mile pipeline from Pleasanton to San Leandro and enters the East Bay Dischargers Authority (EBDA) system for dechlorination and discharge through a deepwater outfall to the San Francisco Bay.⁵⁷ In Table 4-8, current and projected volumes of wastewater effluent exported through the LAVWMA pipeline are shown.

57. Whitley Burchett & Associates, 2005 Wastewater Treatment Plant Master Plan Update, Dec. 2005, p. 1-2.

Method of disposal	Treatment	2010	2015	2020	2025	2030	2035
Pumped through LAVWMA Export	Secondary, Disinfected	13,332	14,240	13,850	14,311	14,647	14,759
Total		13,332	14,240	13,850	14,311	14,647	14,759

4.5.3 Recycled Water Production Limitations

The capacity of DSRSD facilities limits the production of recycled water. Current recycled water production and delivery to both DSRSD and EBMUD is limited to 12.7 mgd, the combined capacity of the RWTF's SFUV (9.7 mgd) and MFUV (3.0 mgd) facilities. A planned future expansion will increase the SFUV capacity to 16.5 mgd. The timing of this expansion correlates directly with the projected recycled water demands discussed in Section 4.5.6.

Water rights also limit production of recycled water. In 2008, the SRVRWP's peak day demand for recycled water exceeded the amount of secondary effluent collected from the DSRSD wastewater collection system. DSRSD entered into an agreement with the City of Pleasanton in 2002 allowing utilization of up to 2.5 mgd of secondary effluent collected from the Pleasanton wastewater collection system. The agreement expires in December 2011.

DERWA and DSRSD are pursuing the following alternative water supplies starting the summer of 2012 through at least 2018:

- Extend the existing agreement with the City of Pleasanton;
- Divert secondary effluent from the LAVWMA pipeline that conveys the Livermore WWTP effluent to the LAVWMA pumping station;
- Install ground water wells in the fringe basin to meet peak irrigation demands;
- Utilize potable water to meet peak irrigation demands.

DSRSD has an agreement in place with Zone 7 to renovate an abandoned gravel quarry for recycled water storage to meet peak demands. Zone 7 anticipates obtaining ownership of the gravel quarry when mining is complete in the 2018 to 2020 time period.

4.5.4 Recycled Water Distribution

As discussed above, DSRSD and EBMUD formed a joint powers authority in 1995 to operate the SRVRWP, a multi-phased project to supply recycled water from DSRSD's RWTF to portions of DSRSD's and EBMUD's service areas. The SRVRWP operates a backbone recycled water distribution system that includes sixteen miles of transmission mains, two tanks, and four pump stations. DSRSD and EBMUD each constructed separate distribution systems within their respective areas to convey recycled water from the SRVRWP backbone to existing and new irrigation customers in portions of Dublin, San Ramon, Blackhawk and Danville. The program serves golf courses, parks, planted common areas managed by homeowner associations, roadway medians and greenbelts, and landscaped

areas of schools and office complexes. The program is designed to provide up to 3,696 AFA of recycled water to DSRSD customers and 2,688 AFA of recycled water to EBMUD customers. Deliveries began in 2005.⁵⁸

Since 1998, DSRSD has installed approximately 55 miles of recycled water distribution pipelines off the SRVRWP backbone.⁵⁹ These pipelines currently deliver landscape irrigation water to DSRSD customers in the eastern portion of Dublin and the Dougherty Valley portion of San Ramon.

4.5.5 Current Recycled Water Use

Water Code Section 10633(c)

Prior to 1999, recycled water was used in the DSRSD water service area only for compaction, dust control, and sewer cleaning. In 1999, DSRSD began delivering recycled water to the Dublin Sports Grounds for landscape irrigation. Through subsequent connection to the SRVRWP backbone, DSRSD's recycled water distribution system expanded to serve newly developed areas in Dougherty Valley and the eastern portion of Dublin.

Current recycled water uses in DSRSD's service area are shown in Table 4-9. In 2010, recycled water production at the RWTF was 2,977 AF; of that amount, 2,194 AF was used in DSRSD's service area and 783 AF was used in EBMUD's service area.



Dublin Sports Grounds under renovation in 2010. The renovation included installation of a recycled water irrigation system.

58. Source: DERWA website www.derwa.org, February 24, 2009.

59. Source: DSRSD Website www.dsrds.com, January 25, 2011.

Table 4-9. Current (2010) Recycled Water Use (AFA)		
Use Type	Place	Quantity
Landscape irrigation ¹	Parks, medians, streetscapes, landscape areas in schools in eastern Dublin and	494.3
Commercial irrigation ²	Landscape areas in multi-family and general commercial areas in eastern Dublin and Dougherty Valley; including DSRSD dual plumbed buildings at WWTP and Dougherty	968.4
Golf course irrigation	Dublin Ranch Golf Course, Dublin	212.8
Construction dust control/ grading/ sewer	Construction areas in eastern Dublin, Dougherty Valley	53.7
WWTP internal use	WWTP landscape, FSL evaporation make-up	465.0
Delivery to EBMUD	EBMUD service area	783
Total		2,977
¹ Includes parks, schools, streetscapes, churches, or other public facilities		
² Includes multi-family residential and commercial building use such as landscaping and toilets, and other commercial uses (garbage can cleaning)		

In 2010, DSRSD customers used recycled water primarily for landscape irrigation at a golf course and numerous commercial and multi-family residential complexes, streetscapes, parks, and schools. Approximately 76 percent of the 2,194 AF of recycled water delivered in 2010 was for landscape irrigation and incidental commercial use, including garbage can cleaning and toilet flushing; approximately 21 percent for landscape irrigation at DSRSD's WWTP and make-up water at its facultative sludge lagoons; and approximately 2 percent for construction uses, including grading, dust control, and sewer flushing.

Where recycled water distribution mains are adjacent to construction sites, DSRSD allows temporary connection to the distribution main so that construction contractors may obtain recycled water for construction use. DSRSD has also made recycled water available to customers at its recycled water treatment plant and through nine recycled water fire hydrants located throughout its service area.

Other minor uses include toilet flushing and garbage can cleaning. DSRSD owns two dual-plumbed buildings where recycled water is used to flush toilets: (1) a recycled water pump station in Dougherty Valley, and (2) a maintenance building in DSRSD's wastewater treatment plant. DSRSD provides recycled water to a commercial business that provides garbage can cleaning service to residences. Recycled water demand from this customer is minor, but the use is creative.

4.5.6 Projected Recycled Water Use

Water Code Section 10633(d), 10633(e), and 10633 (g)

In December 2005, DSRSD adopted its *2005 Water Master Plan Update*, which includes an update to its “Recycled Water System Master Plan” (attached as Appendix M of this UWMP). This adopted master plan established Board policy as to the amount of recycled water DSRSD plans to develop and deliver to customers at buildout of its water service area, and outlines the design and operational criteria of the District’s recycled water distribution system. DSRSD plans to deliver a total of 3,700 AFA (3.3 mgd) of recycled water at buildout of its service area. This commitment directly offsets Zone 7’s need to provide 3,700 AFA of potable water supplies. In turn, lower potable water demand and peaking factors also reduces the required capacities of transmission pipelines, pump stations, and other potable water system infrastructure.

In accordance with the 2005 “Recycled Water System Master Plan,” dual distribution systems have been installed throughout the developing areas of eastern Dublin and Dougherty Valley. Construction of the entire recycled water backbone infrastructure is complete. DSRSD expects the recycled water distribution system to expand in parallel with its potable water distribution system as development continues in its service area. DSRSD is also seeking to install dual distribution systems in established areas of Dublin by extending recycled water mains to older portions of its service area. This would replace potable water irrigation with recycled water in the Camp Parks Reserve Forces Training Area, the Federal Correctional Institution, the Santa Rita Jail, and various parks, schools, streetscapes, and multi-family residences in central and western Dublin.

DSRSD’s 2005 UWMP included 2010 recycled water use projections from its *2005 Water Master Plan*. These projections are compared to actual 2010 recycled water use in Table 4-10. Actual use in 2010 exceeded projections made in 2005 by 277 AF or 10.26 percent. Aggressive development in DSRSD’s service area between 2005 and 2010 contributed to this outcome. Additionally, DSRSD has proactively encouraged the use of recycled water in its service area as discussed in Section 4.5.7 and Section 6 (BMP 5) of this UWMP.

Anticipated continued development will increase the use of recycled water. DSRSD Code Section 3.20.110, “Duty to connect—Recycled water” (Appendix H), requires new development to use recycled water for irrigation except under specific conditions. Compliance is required if an applicant is to receive potable water service from DSRSD.

Table 4-10. Actual 2010 Recycled Water Use vs. Projected 2010 Recycled Water Use from 2005 UWMP (AFA) (DWR Table 24)		
Use Type	2010 Actual Use	2005 Projection for 2010
Agricultural irrigation	0	0
Landscape irrigation ¹	494	500
Commercial irrigation ²	968	500
Golf course irrigation	213	235
Wildlife habitat	0	0
Wetlands	0	0
Industrial reuse	0	0
Groundwater recharge	0	0
Seawater barrier	0	0
Geothermal/energy	0	0
Indirect potable reuse	0	0
Construction use	53.7	0
WWTP internal use	465	465
Delivery to EBMUD	783	1,000
Total	2,977	2,700
¹ Includes parks, schools, streetscapes, churches, or other public facilities		
² Includes multi-family residential and commercial building use such as landscaping and toilets, and other commercial uses (garbage can cleaning)		

Current recycled water use is described in Section 4.5.5. Potential future uses are similar to current uses. DSRSD anticipates increased demand in most categories, as shown in Table 4-11. Quantities of recycled water for various user types are itemized and quantities are projected; feasibility for each type of potential use is identified below. In addition to continuing recycled water delivery to existing users, DSRSD expects potential recycled water use for landscape irrigation use in future developments in eastern Dublin and Dougherty Valley. Since construction is expected to continue in DSRSD's service area, recycled water is expected to be used for construction grading, dust control, and sewer flushing. DSRSD also sees potential recycled water use in established areas of Dublin by replacing potable water irrigation demands with recycled water, particularly in the Camp Parks Reserve Forces Training Area, the Federal Corrections Institution, the Santa Rita Jail, and various parks, schools, streetscapes, and multi-family residences in central and western Dublin.

The potential uses described for future development are technically and economically feasible: existing recycled water distribution mains are adjacent to and may be extended into undeveloped areas at incremental cost.

Table 4-11. Projected Future Recycled Water Use (acre-ft/year) (DWR Table 23)

User type	Feasibility ¹	2015	2020	2025	2030	2035
Agricultural irrigation	No	0	0	0	0	0
Landscape irrigation ²	Yes	722	1,131	1,317	1,353	1,407
Commercial irrigation ³	Yes	1,493	2,338	2,722	2,797	2,909
Golf course irrigation	Yes	213	213	213	213	213
Wildlife habitat	No	0	0	0	0	0
Wetlands	No	0	0	0	0	0
Industrial reuse	No	0	0	0	0	0
Groundwater recharge	No	0	0	0	0	0
Seawater barrier	No	0	0	0	0	0
Geothermal/Energy	No	0	0	0	0	0
Indirect potable reuse	No	0	0	0	0	0
Construction Use	Yes	54	54	54	54	0
WWTP Internal Use	Yes	465	465	465	465	465
Delivery to EBMUD	Yes	1,621	2,583	2,583	2,583	2,583
Total		4,568	6,784	7,354	7,465	7,577
¹ Technical and economic feasibility.						
² Includes parks, schools, streetscapes, churches, or other public facilities						
³ Includes multi-family residential and commercial building use such as landscaping and toilets, and other commercial uses (garbage can cleaning)						

The potential uses described for established areas are technically feasible, but their economic feasibility is questionable without external funding assistance. Recycled water distribution mains will need to be extended from the DERWA facilities through established streets and neighborhoods. On-site irrigation facilities will need to be retrofitted for recycled water. Costs for construction through existing streets and conducting on-site retrofits are significantly greater than extending recycled water to developing areas. DSRSD's *Capital Improvement Program Ten Year Plan for Fiscal Years 2011 to 2020* includes projects that would expand DSRSD's RWTF and extend recycled water facilities to federal facilities and the older areas of Alameda County and Dublin. DSRSD is seeking both federal and state funding for its recycled water projects.

Recycled water use for agricultural irrigation and industrial reuse are not feasible because the cities that DSRSD serve do not have nor anticipate such uses. Recycled water use for wildlife habitat, wetlands, groundwater recharge, seawater barrier, geothermal/energy, and indirect potable reuse are not feasible because such uses do not exist, nor are they planned, in DSRSD's service area.

4.5.7 Actions to Encourage Use of Recycled Water

Water Code Section 10633(f) and 10633(g)

DSRSD has been aggressive in encouraging and requiring the use of recycled water. In April 1998, DSRSD adopted Ordinance No. 280 implementing the DSRSD Recycled Water Policy. In April 2004, Ordinance No. 280 was repealed and replaced with Ordinance No. 301 which formally established the rules and regulations governing the use of recycled water within DSRSD's water service area. This ordinance requires, except for small isolated areas, all new irrigation systems serving parks, streetscapes, commercial landscaping and common area landscaping for multifamily complexes to use recycled water. A copy of Ordinance No. 301 is provided in Appendix K. When DSRSD recodified its code in November 2010, it added Section 3.20.110, "Duty to connect—Recycled water." This section requires new development to use recycled water for irrigation except under specific conditions. Compliance is required if an applicant is to receive potable water service from DSRSD.

DSRSD has undertaken a proactive outreach program to encourage public acceptance of recycled water. As described in Section 6 (BMP 2.1) of this UWMP, on-going outreach includes newsletters, videos, speakers, brochures, special events, school programs, and meetings with focus groups.

Furthermore, DSRSD policies related to recycled water use, including District Ordinance No. 301, include provisions that all new development areas must include dual distribution piping for recycled water deliveries, where feasible. The policy also includes provisions that would allow existing potable water irrigation customers to voluntarily convert to recycled water.

Recycled water is considered part of DSRSD's water enterprise for customer service and financial operations. New development applicants who use recycled water for irrigation realize significant savings in capacity reserve fees (formerly known as connection fees) because they do not pay Zone 7 fees for recycled water connections. Recycled water connections represent no potable water demand to Zone 7. These applicants also usually

need smaller potable water meters, thereby reducing their DSRSD and Zone 7 water connection fees for potable water. DSRSD and Zone 7 water capacity reserve fees are shown in Table 4-12. Additionally, recycled water rates are 11 percent less than potable water rates, providing further incentive for new and existing customers to use recycled water.

Meter Size	Alameda County			Contra Costa County		
	DSRSD	Zone 7	Total	DSRSD	Zone 7	Total
5/8 d ²	\$6,993	\$22,230	\$29,223	\$7,698	\$23,270	\$30,968
3/4 d	\$10,489	\$33,345	\$43,834	\$11,547	\$34,905	\$46,452
1 d	\$17,481	\$55,575	\$73,056	\$19,244	\$58,176	\$77,420
1 1/2 d	\$34,963	\$111,150	\$146,113	\$38,488	\$116,352	\$154,840
2 d	\$55,941	\$177,840	\$233,781	\$61,579	\$186,163	\$247,742
1 1/2 t ³	\$34,963	\$266,760	\$301,723	\$38,488	\$279,244	\$317,732
2 t	\$55,941	\$355,680	\$411,621	\$61,579	\$372,326	\$433,905

¹ DSRSD fees apply to both potable and recycled water connections. Zone 7 fees apply only to potable water connections.

² d = Positive Displacement Meter

³ t = W Series Turbo Meter

As discussed in Section 4.5.6, DSRSD is planning to extend its recycled water distribution system to established areas of Dublin, particularly in the Camp Parks Reserve Forces Training Area, the Federal Corrections Institution, the Santa Rita Jail, and various parks, schools, streetscapes, and multifamily residences in central and western Dublin. DSRSD is providing incentives for these existing users to connect to recycled water by providing lower water rates for recycled water, financial assistance in retrofitting the existing sites, and offering irrigation water service reliability during droughts.

The above mentioned incentives are sufficient in encouraging customers use recycled water where they can. DSRSD are working with developers to explore different uses for recycled water including landscape irrigation, recirculating use for cooling systems, and toilet flushing. DSRSD anticipates that the financial incentives discussed above will result in significant increases in recycled water use in the future. In Table 4-13, the estimated amounts of additional recycled water use due to financial incentives are provided. These estimates are part of the recycled water projections included in Table 4-11.

Actions	Projected Results					
	2010	2015	2020	2025	2030	2035
Connection Fee Savings	1,729	2,428	3,682	4,252	4,363	4,529
Water Rate Savings + Retrofit		250	350	610	610	610
Total	1,729	2,678	4,032	4,862	4,973	5,139

4.6 Future Water Supply Projects

Water Code Section 10631(h)

As stated in Section 4.1, DSRSD's water supply contract with Zone 7 provides that DSRSD shall purchase from Zone 7 all water required by DSRSD for use within DSRSD's service area, except that DSRSD may extract groundwater per the contract provisions or obtain water from "Other Sources" as defined in the contract. DSRSD's Future Water Supply Projects are listed in Table 4-14. DSRSD does not plan to pursue opportunities for development of future water supply projects because, by contract with Zone 7, DSRSD may not do so. DSRSD therefore defers to Zone 7 in pursuing future water supply projects.

Project name	Projected start date	Projected completion date	Potential project constraints	Normal-year supply	Single-dry year supply	Multiple-dry year first year supply	Multiple-dry year second year supply	Multiple-dry year third year supply
None	NA	NA	NA	0	0	0	0	0
Total			0	0	0	0	0	0

Sections 11 and 12 of Zone 7's 2010 UWMP include potential programs and projects to increase Zone 7's water supply. A copy of this list is included as Appendix L. These projects include a long-term "Delta Fix", long-term or permanent water transfers, and desalination. Zone 7 is performing a detailed analysis of potential programs and projects to increase the reliability of its water supply in its *2011 Water Supply Evaluation* to be completed in mid-2011. Zone 7 anticipates that it can secure a new water supply to reliably meet projected demands in its service area. The amounts of these new water supplies are

summarized in Table 4-15. As indicated in the table, 10,500 AF of new supply is projected to be available during normal water years, while 6,100 AF of new supply would only be available during dry years; these preliminary estimates were based on projected demands to be met by Zone 7 under a 100% reliability policy. Base years were chosen to match those of the SWP.⁶⁰

Water Year Type	Base Year(s)	2020 to 2030	
		Yield, AF	% of Normal
Normal	1942	10,500	100%
Single Dry	1977	6,100	57%
Multiple Dry	Year 1 to 5 (1988 to 1992)	6,100	57%

4.7 Water Supply Contracts

DSRSD's water supplies are obtained through various contracts. As stated in Section 4.1, DSRSD's potable water supply is through a contact with Zone 7. In turn, Zone 7's water supplies are obtained through contracts with DWR and Byron Bethany Irrigation District. DSRSD's recycled water supply is from its own WWTP and is distributed through DERWA by contract. Additionally, DSRSD's emergency water supplies through interties described in Section 2.2.4 have associated contracts.

As discussed in Section 4.5, DSRSD's recycled water supply is from DSRSD's WWTP which treats wastewater collected from its wastewater service area. During high recycled water demands, DSRSD makes use of City of Pleasanton's wastewater effluent that is also treated at DSRSD's treatment plant by contract. DSRSD and the City of Pleasanton have a current contract in place for this supply for recycled water treatment.

60. Zone 7 Water Agency, 2010 Urban Water Management Plan, Pages 11-1 to 12-3.

61. Ibid, Table 11-1, p. 11.5.

These contacts and their associated contract amounts and expiration dates are listed in Table 4-16. These contracts are expected to be renewed beyond their expiration dates with substantially similar provisions.

Table 4-16. Water Supply Contracts for Various DSRSD Water Sources			
Water Supply Source	Contracting Parties	Contract Amount	Termination Date
DSRSD POTABLE WATER			
Municipal Water Supply ¹	DSRSD/Zone 7	100% of Potable Water Demand	8/23/2024
ZONE 7 SURFACE WATER SUPPLY²			
Zone 7 State Water Project Allocation	Zone 7/DWR	46,000 AFA	11/20/2036
<i>Additional SWP Allocation from Water Transfers</i>			
Lost Hills Water District	Zone 7/DWR	15,000 AFA	11/20/2036
Berrenda Mesa Water District	Zone 7/DWR	7,000 AFA	11/20/2036
Belridge Water Storage District	Zone 7/DWR	12,219 AFA	11/20/2036
Tulare Lake Basin Water Storage District	Zone 7/DWR	400 AFA	11/20/2036
Byron Bethany Irrigation District	Zone 7/BBID	5,000 AFA	2030, option to extend to 2039
Lower Yuba River Accord (DWR)	Zone 7/DWR	No Fixed Cap	2025
ZONE 7 WATER STORAGE³			
Semitropic Water Storage District	Zone 7/Semitropic Water Storage District	5,883 AFA; 78,000 AF Capacity	12/31/2035
Cawelo Water District	Zone 7/Cawelo Water District	5,000 AFA; 120,000 AF Capacity	12/31/2035
DSRSD RECYCLED WATER			
Pleasanton Wastewater ⁴	DSRSD/ City of Pleasanton	2.5 mgd	12/31/2011
DSRSD EMERGENCY WATER INTERTIES			
Three Interties with EBMUD ⁵	DSRSD/EBMUD	2,500 gpm Maximum	120 days notice
Two Interties with Pleasanton ⁶	DSRSD/ City of Pleasanton	Based on availability from supplying agency	365 days notice
¹ DSRSD/Zone 7's August 23, 1994 Municipal & Industrial Water Supply Contract, Appendix E.			
² From Zone 7 2010 UWMP, Table 8-1.			
³ From Zone 7 2010 UWMP, Table 8-1 and Section 8.2, page 8-2.			
⁴ DSRSD/City of Pleasanton November 19, 2002 Third Supplemental Agreement and November 19, 2009 Fourth Supplemental Agreement to Agreement for Wastewater Disposal Services.			
⁵ DSRSD/EBMUD's June 19, 1990 Emergency Water Services Agreement; amended April 16, 2007.			
⁶ DSRSD/City of Pleasanton January 16, 1996 Emergency Water Services Agreement.			



Water Supply Reliability and Water Shortage Contingency Plan

The purpose of this section is to compare DSRSD's water demands over the next 25 years in five-year increments with its water supplies, assess the reliability of its water service during normal, single dry, and multiple dry water years and to present contingency plans to address changes or shortages in supply.

As described in Section 4, Zone 7 provides DSRSD's potable water supplies. DSRSD supplements the potable water supplied by Zone 7 with recycled water produced at the District's RWTF.

Since DSRSD relies totally on Zone 7 for potable supplies, the following sections rely heavily on the reliability and contingency information provided in Zone 7's 2010 UWMP, which was adopted by its Board of Directors on December 15, 2010. DSRSD's dependence on Zone 7's water supply requires that relevant sections of Zone 7's 2010 UWMP be referenced and incorporated in this UWMP. For more details, the reader is directed to that report.

5.1 Water Supply Reliability

DSRSD's water supply sources are described in Section 4.1. This section will address:

- resources maximization and import minimization;
- water supply reliability:
 - bases for normal, single-dry and multiple-dry-year analysis and minimum yields;
 - historical available water supplies and storage;
 - Zone 7's dynamic simulation model to predict potential water shortages;
- programs and projects to supplement water supplies.

5.1.1 Resource Maximization and Import Minimization

Water Code Sections 10620(f) and 10631(c)(2)

As noted in Section 4, DSRSD's potable water supply is from Zone 7, which contracts with a number of agencies for its water supplies and storage. DSRSD's recycled water supply is treated at DSRSD's RWTF and wholesaled to DSRSD through DERWA. Each Zone 7 and DSRSD source is affected by limitations related to legal, environmental, water quality, and/or climatic issues, as summarized in Table 5-1. DSRSD's recycled water supply is also limited by water rights issues, treatment facilities capacity, and storage capacity, as discussed in Section 4.5.3.

Maximizing water supply resources and minimizing dependence on imported water is an important part of DSRSD's Strategic Plan. Zone 7's primary water source is imported surface water (over 80 percent). To minimize demand placed on Zone 7 sources, DSRSD has implemented the demand management measures discussed in Section 6 and plans to maintain its efforts. As discussed in Section 3.4.1, DSRSD plans to implement a water conservation program to meet the requirements of the Water Conservation Act of 2009.

Additionally, DSRSD continues to extend recycled water distribution to the extent practical. It has adopted DSRSD Code Section 3.20.110, "Duty to connect—Recycled water" (Appendix H), which requires new development to use recycled water for irrigation except under specific conditions. Compliance is required if an applicant is to receive potable water service from DSRSD. The District also offers various financial incentives for connection to recycled water.

Table 5-1. Factors Resulting in Inconsistency of Supply¹ (DWR Table 29)

Water Supply Sources	Legal	Environmental	Water Quality	Climatic	Notes
Zone 7 Water Agency Supplies					
Arroyo Del Valle Watershed	X	X	X	X	This supply is subject to a water rights permit and its legal stipulations. Environmental factors (e.g., habitat) are one of the considerations of water rights permits. Water quality is primarily an issue during storage in Lake Del Valle, where algal blooms can occur; however, the quality of in-stream flows may also have an impact. Climate change may have an impact on hydrologic conditions and the quantity and timing of water availability.
SWP – Table A	X	X	X	X	Legal and environmental issues significantly affect the availability of this supply. The presence of endangered and threatened species in the Delta, in particular, have had significant impacts on supply reliability. Salt intrusion into the Delta is also an important factor that can affect water deliveries from the SWP. In case of levee failures, high levels of organic carbon can impact supplies traveling through the Delta. Climate change may have an impact on hydrologic conditions and water availability; furthermore, sea level rise would affect operations of SWP facilities. Note that fish-related restrictions (Biological Opinions) and potential climate change impacts have been incorporated into DWR's reliability estimates for the SWP, and therefore into this UWMP as well.
SWP – Carryover					
SWP – Yuba Accord					
BBID	X	X	X	X	A minimum amount of water supply is guaranteed under the BBID contract; however, the availability of water is potentially subject to new legal requirements related to environmental, water quality, or other issues. The availability of additional water in the future may also be affected by changing hydrologic conditions resulting from climate change.
Zone 7 Water Agency Storage					
Livermore Amador Valley Main Basin ² - SWP & Arroyo Del Valle	X	X	X	X	The availability of water from the Main Basin is primarily subject to the availability of excess water supplies from the various sources during normal/wet years, and is therefore also affected by the factors as described above. Water quality issues within the Main Basin, such as elevated salts, impact costs but are not likely to affect the overall reliability.
Semitropic-Delta	X	X	X	X	The availability of water from storage is primarily subject to the availability of excess water supplies from the various sources during normal/wet years, and is therefore also affected by the factors as described above. In addition, there continues to be legal challenges to the Monterey Amendment to the SWP Contracts, which includes the water banking programs in Kern County. Water quality issues within the groundwater basin, such as the presence of arsenic in the Semitropic groundwater bank, impact costs but are not likely to affect their overall reliability.
Cawelo-Delta					
Zone 7 Planned Supplies					In pursuing new water supply options, Zone 7 will mitigate legal, environmental, water quality, and climatic risks to the extent possible; the specific factors affecting the reliability of the future supplies are unknown at this time.
DSRSD Groundwater					DSRSD's groundwater pumping quota was determined based on the sustainability of the Main Basin; therefore, its reliability is not expected to be significantly affected by the factors listed here.
DSRSD - Recycled Water	X				DSRSD and EBMUD's total recycled water peak day demands currently exceeds the amount of secondary effluent collected from DSRSD's wastewater service area. DSRSD entered into an agreement with the City of Pleasanton in 2002 allowing utilization of up to 2.5 mgd of secondary effluent collected from the Pleasanton wastewater collection system. The agreement expires in December 2011.

¹ Potential limitations on the supply arising from the factors listed in the table have not been quantified.

² Source of DSRSD's GPQ, pumped by Zone 7 on DSRSD's behalf by contract.

Because Zone 7 is DSRSD's sole water supplier, its efforts to maximize resources and minimize imports is relevant to DSRSD's water supply reliability. Zone 7 has a long history of resource maximization and import minimization through conjunctive use of the Livermore Valley Groundwater Basin, along with local runoff stored in Lake Del Valle. The basin is used for long-term storage and water is recharged from local runoff and imported SWP water. The following paragraphs are directly excerpted from Section 3.2 of Zone 7's 2010 UWMP.

Zone 7 continues to strive to develop local sources of water, and to diversify its water supply portfolio to generally increase reliability. Zone 7's 2011 Water Supply Evaluation is to be completed in June, with the goal of developing a set of water supply and infrastructure portfolios that will provide the flexibility required to respond to an uncertain future caused by legal and environmental constraints in the Delta and climate change, and offer a reliable supply of high quality water to the Livermore-Amador Valley. One portfolio being developed is focused on sources within the Livermore-Amador Valley, such as recycled water, rainfall capture, and completion of facilities required to fully perfect Zone 7's water right permit for Arroyo del Valle. Water conservation also plays an important role in local water resource management. Zone 7 has been proactively implementing water demand management measures in the service area in cooperation with the retailers.⁶²

To optimize use of its local resources, Zone 7 practices conjunctive use of the Livermore Valley Groundwater Basin with local runoff from Arroyo del Valle stored in the local reservoir owned and operated by DWR (Lake Del Valle). Artificial recharge into the Basin utilizing stored local water or imported water from the SWP supplements natural recharge. More details about Zone 7's conjunctive use program can be found in Zone 7's *Groundwater Management Plan*.⁶³

Finally, Zone 7 has entered into several long-term water storage ("banking") agreements with agencies outside of the service area in Kern County (Semitropic Water Storage District and Cawelo Water District) to gain additional flexibility in managing fluctuations in supplies and providing water during drought and other emergency conditions.⁶⁴

More discussion on Zone 7's various sources and DSRSD's implementation of recycled water including current and projected amounts and how it will be used to meet the total water demands within the District is included in Section 4 of this UWMP.

5.1.2 Water Supply Reliability

In this section, the various supplies of water available to DSRSD through Zone 7 and DSRSD's RWTF are addressed, along with their respective reliability in a normal water year,

62. Zone 7 Water Agency, *2010 Urban Water Management Plan*, Section 3.2, p. 3-3.

63. Ibid.

64. Ibid.

a single dry year, and multiple dry years. The base years vary for each Zone 7 source, depending on its watershed. Since DSRSD's potable water supply reliability is directly related to Zone 7, much of the information below has been excerpted from Zone 7's 2010 UWMP.

The reliability of DSRSD's potable water supply is subject to its water supply contract with Zone 7 and Zone 7's water supply reliability policy. Zone 7 adopted the "Reliability Policy for Municipal and Industrial (M&I) Water Supplies (Resolution 04-2662)" in August 2004 (see Appendix J). This policy guides the management of Zone 7's M&I water supplies as well as its capital improvement program (CIP) through two goals:

- Goal 1: Meet 100 percent of M&I water demands over the next 20 years through average, single dry, and multiple dry years.
- Goal 2: Meet 75 percent of maximum day demands with a major facility out of service.

During the preparation of its 2010 UWMP, Zone 7 was also working on its WSE and expects to complete it mid-2011. Zone 7 is reviewing the applicability of its reliability policy as part of that effort.⁶⁵ The above mentioned reliability policy may be modified because of legal, environmental, and climatic factors. However, no modification has been proposed during the preparation of this UWMP, and it is assumed that the policy remains in effect throughout DSRSD's water supply reliability analysis.

DSRSD's potable water supply reliability and vulnerability is directly related to seasonal and climatic shortage that impact Zone 7's water supplies. Approximately 85 percent of Zone 7's water supply comes from surface water, which is subject to legal and environmental issues surrounding the San Francisco Bay Delta. Water deliveries from the SWP have been reduced.

Reliability and vulnerability of DSRSD's recycled water supply are related to seasonal fluctuations in production of wastewater in DSRSD's service area and are not limited by base water years data, as discussed in Section 5.1.2.1. Instead, DSRSD's wastewater collection volume is lower during periods of high demand for recycled water. As discussed in Section 4.5.3, DSRSD is seeking various alternatives to resolve recycled water limitations. Recycled water supply reliability is discussed in Section 5.1.2.4.

5.1.2.1 Basis of Water Year

Water Code Section 10631(c)(1)

As discussed earlier, DSRSD's potable water supply is linked with Zone 7's water supplies and their reliability and vulnerability. In Zone 7's 2010 UWMP, Zone 7 reviewed the historical data and developed projected yield for each of its sources under three scenarios:

65. Ibid, Section 7.1, p. 7-1.

- *Normal Water Year:* The year in the historical sequence most closely representing median runoff or allocation levels and patterns.
- *Single Dry Year:* The year with the lowest annual runoff or allocation in the historical sequence.
- *Multiple Dry Years:* The lowest runoff or allocation for a consecutive five-year period in the historical sequence.⁶⁶

Base water years for each of Zone 7's water supply sources are summarized in Table 5-2. The water year basis varies depending on the water source; explanatory details are included in Section 7 of Zone 7's 2010 UWMP, along with historical percentages of normal delivery.

Table 5.2 Basis of Water Year Data for Various Zone 7 Water Supplies¹ (DWR Table 27)			
Water Source	Base Year(s)		
	Normal Year	Single Dry Year	Multiple Dry Years
From Surface Water			
Arroyo del Valle	1932	1977	1987 - 1991
SWP - Table A Water	1942	1977	1988 - 1992
SWP - Carryover	1942	1977	1988 - 1992
SWP - Yuba Accord Water ²	1922 - 2003	1977	1988 - 1992
Byron Bethany Irrigation District	1942	1977	1988 - 1992
From Storage			
Livermore-Amador Valley Main Basin ³	1942	1977	1988 - 1992
Semitropic	1942	1977	1988 - 1992
Cawelo	1942	1977	1988 - 1992
¹ From Zone 7 2010 UWMP Tables 7-1 to 7-8.			
² Normal year is based on median yield between 1922 and 2003.			
³ Source of DSRSD's GPQ, pumped by Zone 7 on DSRSD's behalf by contract.			

5.1.2.2 Historical Total Available Potable Water Supplies

Water Code Section 10631(c)(1)

The total amount of water available from Zone 7 supplies and storage for normal, single dry, and multiple dry years is shown in Table 5-3. Historically, Zone 7 has been able to match or exceed normal year water supplies even during multiple dry years.

66. The *Water System Master Plan* update is currently evaluating the impacts of a 6-year or longer drought.

Table 5-3 Supply Reliability — Historic Conditions¹ (DWR Table 28)							
Water Source	Average / Normal Water Year	Single Dry Water Year	Multiple Dry Water Years				
			Year 1	Year 2	Year 3	Year 4	Year 5
From Surface Water							
Arroyo del Valle	7,100	-	930	350	520	150	4,400
SWP - Table A	51,400	8,000	23,900	47,800	15,700	22,700	19,500
SWP - Carryover	-	20,200	20,200	27,600	20,200	20,200	20,200
SWP - Yuba Accord	145	676	676	676	676	676	676
BBID	4,500	2,000	2,000	2,000	2,000	2,000	2,000
From Storage							
Main Basin ²	9,200	26,200	14,000	14,000	14,000	14,000	14,000
Semitropic	-	9,100	10,700	13,600	9,600	10,500	10,100
Cawelo	-	10,000	10,000	10,000	10,000	10,000	10,000
Total	72,345	76,176	82,406	116,026	72,696	80,226	80,876
Percent of Average/Normal Year:		105.3%	113.9%	160.4%	100.5%	110.9%	111.8%
¹ From Zone 7 2010 UWMP Tables 7-1 to 7-9.							
² Source of DSRSD's GPQ, pumped by Zone 7 on DSRSD's behalf by contract.							

5.1.2.3 Zone 7 Water Supply Reliability

As part of its 2010 UWMP, Zone 7 performed additional rigorous analysis, using a more conservative approach to evaluate supply reliability. Zone 7 staff developed a new risk model that incorporates potential variations from the historical sequence of events. For that analysis, DSRSD provided Zone 7 with the projected water demands shown on the first row of Table 3-11. The new dynamic model, which uses Monte Carlo methods for incorporating uncertainty, yields more conservative results, indicating larger shortages by 2030, the time limit of Zone 7's analysis. Zone 7's results are shown in Section 16, Tables 16-1, 16-2 and 16-3, of its 2010 UWMP, and are included in DSRSD's UWMP as Appendix N.

Zone 7 staff compared projected water supplies during normal, single dry, and multiple dry water years with its customers' demand scenarios, both without potential water conservation ("high water demand") and with potential water conservation ("low water demand") associated with the Water Conservation Act of 2009. Zone 7 projected water supplies are discussed in Sections 4.3, 4.4 and 4.6 of this UWMP, and include the projected new water supplies presented in Table 4-15. The results of this analysis are discussed below, excerpted from Section 16 of Zone 7's 2010 UWMP.⁶⁷

67. Zone 7 Water Agency, 2010 Urban Water Management Plan, Section 16, p. 16-1 to 16-2.

Under normal water years, Zone 7 does not anticipate any difficulty in meeting projected water demands, with or without additional conservation measures, assuming Zone 7 can successfully implement planned programs and projects (see Table 16-1 of Zone 7's 2010 UWMP, Appendix N herein). Note that a portion of the water demand during a normal water year includes the storage of water supply for use during dry years. The maximum potential shortage—based on the high water demand scenario—could be as high as 10,500 acre-feet (AF) between 2020 and 2030 if Zone 7 cannot implement planned programs and projects.

Under single dry years, Zone 7 does not expect shortages through 2030 with the implementation of planned programs and projects (see Table 16-2 of Zone 7's 2010 UWMP, Appendix N herein). The maximum potential shortage—based on the high water demand scenario—could be as high as 8,700 AF between 2020 and 2030 if Zone 7 cannot implement planned programs and projects. The maximum potential shortage during single dry years is lower than that for normal water years because Zone 7 makes use of its stored water distributed between the local groundwater basin and the banking programs in Kern County.

Finally, under multiple dry years, planned programs and projects have similarly been designed to prevent any shortages. Zone 7's analysis indicates that, without such programs and projects, shortages of up to 36,000 AF can be expected under a multiple dry year scenario ending in 2030, based on the high water demand scenario. The water supply amounts shown in Tables 16-3(a) through (d) (Zone 7's 2010 UWMP, Appendix N herein)—as well as in the other tables—reflect the results of analysis using Zone 7's newly developed water supply model, which uses Monte Carlo methods for incorporating uncertainty. The higher water supply availability during the second year of each multiple dry year scenario is primarily due to the occurrence of a wet year in the midst of the dry year sequence that was used in the model. This sequence is based on the 1988 to 1992 drought.

In summary, Zone 7 is aggressively developing a strategy via its 2011 WSE for providing a reliable, high-quality water supply that will meet the needs of the Livermore-Amador Valley through buildout of adopted general plans. As part of its strategy, Zone 7 will also re-evaluate its current reliability policy.

5.1.2.4 DSRSD Water Supply Reliability

Water Code Section 10635(a)

During the preparation of this UWMP, DSRSD revisited and revised its water demand projections based on current water conservation results and requirements of the Water Conservation Act of 2009, as discussed in Section 3.3. The revised potable water

demand projections are shown on the second row of Table 3-11 and repeated in Table 5-4. Because of DSRSD customers' water conservation efforts and DSRSD's expansion of recycled water use, ultimate potable water demands are expected to be 1,300 AF less than originally projected. These revised demands were provided to Zone 7.

Table 5-4. DSRSD Demand Projections (AFA)						
	2010	2015	2020	2025	2030	2035
Original 2010 Zone 7 Demand Projections ¹	10,900	12,900	15,700	18,200	19,800	19,800
Revised Zone 7 Demand Projections ²	9,300	12,900	16,000	17,500	18,300	18,500
DSRSD Recycled Water ³	1,800	2,500	3,800	4,400	4,500	4,600
¹ Provided to Zone 7 Water Agency February 2, 2010. Incorporated in Zone 7's 2010 UWMP, Table 9-4, adopted December 15, 2010. Rounded up to the nearest 100 acre-ft.						
² Revised DSRSD demand projections based on input from Cities and Counties in DSRSD Service Area during preparation of DSRSD's 2010 UWMP and implementation of Water Conservation Act requirements. Rounded up to the nearest 100 acre-ft.						
³ DSRSD treats recycled water at its RWTF. See Section 4.5 for discussion on recycled water production limitations, and efforts to expand recycled water production.						

POTABLE WATER

Zone 7 is DSRSD's sole potable water supplier. Although their current water supply contract term ends in 2024, the two agencies expect to renew the contract with substantially similar provisions. Zone 7 has a 100 percent water supply reliability policy in place for DSRSD and other retailers in the Livermore-Amador Valley, which it has historically been able to meet and is currently evaluating as part of its 2011 WSE.

Zone 7 anticipates that its retailers will conform to the requirements of the Water Conservation Act of 2009. However, Zone 7 conducted its reliability analysis using high water demand (no conservation) and low water demand (valley-wide 20 percent reduction by 2020) to develop a range for anticipated water shortage and plan for the worst case scenario. Zone 7's conservative approach indicates that it may have water shortages beginning as early as 2023 for a multiple dry years event. As discussed in the above section, Zone 7 is aggressively planning for water supply programs and projects to meet the water demands of its customers through buildout of adopted general plans. DSRSD plans to reduce its potable water demands through conservation efforts and its recycled water program.

In analyzing the reliability of DSRSD's potable water supply, DSRSD calculated the percentage of possible water shortage if Zone 7's planned programs and projects are implemented, and if they are not implemented. Without implementation, Zone 7's customers will experience water supply shortages. All of Zone 7's customers, including the water retailers in the Livermore-Amador Valley, are assumed to proportionally share the impacts of the shortages. DSRSD's potable water supply reliability for normal years, single dry year, and multiple dry years are shown on Tables 5-5, 5-6, and 5-7.

The supporting data and calculations for the determination of possible valley-wide water shortage are included in Appendix O. Data from Tables 16-1 through Tables 16-3(d) of Zone 7's 2010 UWMP were used for the calculations. DSRSD's demand projections that were provided to Zone 7 in 2010 (first row of data in Table 5-4) were subtracted, and revised demand projections (second row of data in Table 5-4) were added. For multiple dry years, the first year of the three-year sequence is the year ending 0 or 5, and the projections for the second and third years were interpolated. The retailers in the Livermore-Amador Valley were assumed to conform to the requirements of Water Conservation Act of 2009. To determine shortage, total water supply, without Zone 7 planned programs and projects, was compared to Zone 7's low water demands for each year.

In Table 5-5, DSRSD's potable water demand is compared to Zone 7's water supply during a normal year. If Zone 7's planned programs and projects are implemented, DSRSD anticipates no water supply shortage. However, if Zone 7's planned programs and projects are not implemented, DSRSD anticipates shortage of approximately 3 percent starting 2030. A slight increase in shortage is expected by 2035; however, the water shortage remains under 4 percent.

In Table 5-6, DSRSD's potable water demand is compared to Zone 7's water supply during a single dry year. In a single dry year, "Zone 7 makes use of its stored water distributed between the local groundwater basin and the banking programs in Kern County."⁶⁸ Overall Zone 7 water demands are lower for the year because water demand that is normally for storage is not included in the water demands in a single dry year. If Zone 7's planned programs and projects are implemented, DSRSD anticipates no water supply shortage. However, if Zone 7's planned programs and projects are not implemented, DSRSD anticipates a shortage of approximately one percent starting 2035.

In Table 5-7, DSRSD's potable water demands are compared to Zone 7's water supply during multiple dry years events. If Zone 7's planned programs and projects are implemented, DSRSD anticipates no water supply shortage. However, if Zone 7's planned programs and projects are not implemented, water shortages may occur as follows:

- For a multiple dry year event that starts in 2025, DSRSD anticipates that it will receive 72 percent of its total potable water demand (28 percent water shortage) in the third year of a multiple dry years event.
- For a multiple dry years event that starts in 2030, DSRSD anticipates that it will receive 98 percent of its total potable water demand (2 percent water shortage) in the first year, and 69 percent of its total potable water demand (31 percent water shortage) in the third year.

68. Ibid, Section 16, p. 16-1.

- For a multiple dry years event that starts in 2035, DSRSD anticipates that it will receive 98 percent of its total potable water demand (2 percent water shortage) in the first year, and 69 percent of its total potable water demand (31 percent water shortage) in the third year.

Zone 7 plans to implement programs and projects to meet its customers' demands. However, if Zone 7 is unable to implement those programs and projects, DSRSD may have to implement its Water Shortage Contingency and Drought Plan, described in Section 5.3.

RECYCLED WATER

DSRSD's recycled water supply reliability for normal years, a single dry year, and multiple dry years are also shown on Tables 5-5, 5-6, and 5-7. DERWA/DSRSD recycled water supply is compared to DSRSD recycled water demands. DSRSD does not anticipate significant challenges in its ability to provide recycled water to its customers. Overall, DSRSD's recycled water supply is 100 percent reliable.

Reliability and vulnerability of DSRSD's recycled water supply are related to seasonal fluctuations in production of wastewater in DSRSD's service area, and are not subject to climatic fluctuations. Wastewater collection volume is subject to seasonal variations; for example, during the dry season, wastewater discharge is low but recycled water demands are high. Legal and storage issues limit DSRSD's production of recycled water; however, these challenges are not insurmountable. As discussed in Section 4.5.3, DSRSD is pursuing various alternatives to resolve these limitations. Because wastewater collected in DSRSD's service area exceeds recycled water demands, and because DSRSD anticipates resolving recycled water limitations, DSRSD has determined that its recycled water supply is 100 percent reliable through the approved general plan buildout of the cities that it serves.

Table 5-5. DSRSD Water Supply and Demand Comparison — Normal Year (AFA) (DWR Table 32)					
	2015	2020	2025	2030	2035
POTABLE WATER					
Zone 7 Planned Projects & Programs Implemented					
Zone 7 Water Supply Totals ¹	12,900	16,000	17,500	18,300	18,500
DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
Difference	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%
Zone 7 Planned Projects & Programs Not Implemented					
Zone 7 Water Supply Totals ^{1,2}	12,900	16,000	17,500	17,711	17,857
DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
Difference	0	0	0	-589	-643
Difference as % of Supply	0%	0%	0%	-3.32%	-3.60%
Difference as % of Demand	0%	0%	0%	-3.22%	-3.48%
RECYCLED WATER					
DSRSD Supply Totals ³	2,500	3,800	4,400	4,500	4,600
DSRSD Demand Totals	2,500	3,800	4,400	4,500	4,600
Difference	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%
¹ Includes DSRSD's 645 acre-ft/year GPQ pumped by Zone 7 and blended with Zone 7's other water supply sources. Rounded up to the nearest 100 acre-ft.					
² Assumes that water supply shortage is shared equally amongst water retailers supplied by Zone 7. See Appendix O for determination of shortages.					
³ Recycled Water from DSRSD's RWTF.					

Table 5-6. DSRSD Water Supply and Demand Comparison — Single Dry Year (AFA) (DWR Table 33)					
	2015	2020	2025	2030	2035
POTABLE WATER					
Zone 7 Planned Projects & Programs Implemented					
Zone 7 Water Supply Totals ¹	12,900	16,000	17,500	18,300	18,500
DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
Difference	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%
Zone 7 Planned Projects & Programs Not Implemented					
Zone 7 Water Supply Totals ²	12,900	16,000	17,500	18,128	18,326
DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
Difference	0	0	0	-172	-174
Difference as % of Supply	0%	0%	0%	-1%	-0.95%
Difference as % of Demand	0%	0%	0%	-1%	-0.94%
RECYCLED WATER					
DSRSD Supply Totals ³	2,500	3,800	4,400	4,500	4,600
DSRSD Demand Totals	2,500	3,800	4,400	4,500	4,600
Difference	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%
¹ Includes DSRSD's 645 acre-ft/year GPQ pumped by Zone 7 and blended with Zone 7's other water supply sources. Rounded up to the nearest 100 acre-ft.					
² Assumes that water supply shortage is shared equally amongst water retailers supplied by Zone 7. See Appendix O for determination of shortages.					
³ Recycled Water from DSRSD's RWTF.					

Table 5-7. DSRSD Supply and Demand Comparison — Multiple Dry Years Events (AFA) (DWR Table 34)						
		2015	2020	2025	2030	2035
POTABLE WATER						
Zone 7 Planned Projects & Programs Implemented						
Multiple dry year first year supply	Zone 7 Water Supply Totals ¹	12,900	16,000	17,500	18,300	18,500
	DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple dry year second year supply	Zone 7 Water Supply Totals ¹	13,500	16,300	17,700	18,300	18,500
	DSRSD Demand Totals	13,500	16,300	17,700	18,300	18,500
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple dry year third year supply	Zone 7 Water Supply Totals ¹	14,800	16,900	18,000	18,400	18,500
	DSRSD Demand Totals	14,800	16,900	18,000	18,400	18,500
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Zone 7 Planned Projects & Programs Not Implemented						
Multiple dry year first year supply	Zone 7 Water Supply Totals ^{1,2}	12,900	16,000	17,500	17,994	18,133
	DSRSD Demand Totals	12,900	16,000	17,500	18,300	18,500
	Difference	0	0	0	-306	-367
	Difference as % of Supply	0%	0%	0%	-2%	-2%
	Difference as % of Demand	0%	0%	0%	-2%	-2%
Multiple-dry year second year supply	Zone 7 Water Supply Totals ^{1,2}	13,500	16,300	17,700	18,300	18,500
	DSRSD Demand Totals	13,500	16,300	17,700	18,300	18,500
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple dry year third year supply	Zone 7 Water Supply Totals ^{1,2}	14,800	16,900	12,880	12,620	12,676
	DSRSD Demand Totals	14,800	16,900	18,000	18,400	18,500
	Difference	0	0	-5,120	-5,780	-5,824
	Difference as % of Supply	0%	0%	-40%	-46%	-46%
	Difference as % of Demand	0%	0%	-28%	-31%	-31%
RECYCLED WATER						
Multiple dry year first year supply	DSRSD Supply Totals ³	2,500	3,800	4,400	4,500	4,600
	DSRSD Demand Totals	2,500	3,800	4,400	4,500	4,600
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple dry year second year supply	DSRSD Supply Totals ³	2,800	3,900	4,400	4,500	4,600
	DSRSD Demand Totals	2,800	3,900	4,400	4,500	4,600
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
Multiple dry year third year supply	DSRSD Supply Totals ³	3,300	4,200	4,500	4,600	4,600
	DSRSD Demand Totals	3,300	4,200	4,500	4,600	4,600
	Difference	0	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%	0%
¹ Includes DSRSD's 645 acre-ft/year GPQ pumped by Zone 7 and blended with Zone 7's other water supply sources. Rounded up to the nearest 100 acre-ft.						
² Assumes that water supply shortage is shared equally amongst water retailers supplied by Zone 7. See Appendix O for determination of shortages.						
³ Recycled Water from DSRSD's RWTF.						

5.1.2.5 Programs and Projects to Supplement Water Supplies

Water Code Section 10631(c)(2)

DSRSD’s water supply contract with Zone 7 provides that DSRSD shall purchase from Zone 7 all water required by DSRSD for use within DSRSD’s service area, with the exception of recycled water. DSRSD defers to Zone 7 in pursuing future water supply projects to meet future potable water demands. DSRSD plans to continue the expansion of its recycled water program as discussed in Section 4.5 to supplement water supplies. DSRSD also plans to maintain its current water conservation programs to ensure that existing water supplies are extended.

Zone 7 has identified several potential projects and programs to supplement existing water supplies and increase supply reliability, which are discussed in Sections 4.3, 4.4, and 4.6. A list is included in Appendix L of this report. These potential programs and projects include: increased yield from existing supplies, new or additional surface water supplies, stormwater and rainfall capture, additional non-local groundwater, increased use of recycled water, desalination, demineralization of groundwater, operational improvements, and water conservation.

5.2 Water Quality Impacts on Reliability

Water Code Section 10634

DSRSD’s potable water supply is from Zone 7 and recycled water supply is from DSRSD’s RWTF. Overall, DSRSD’s water supply reliability is not significantly impacted by water quality issues as summarized in Table 5-8. Water quality issues in DSRSD’s service area are described in further detail below.

Table 5-8. Water Quality — Current and Projected Water Supply Impacts (AFA) (DWR Table 30)							
Water Source	Description of Condition	2010	2015	2020	2025	2030	2035
Zone 7 Water Agency	Meets all federal and state drinking requirements. During high groundwater pumping periods, high TDS and Hardness Levels. Mitigated by Zone 7 wellhead demineralization facility.	0	0	0	0	0	0
DSRSD RWTF	Meets Title 22 disinfected tertiary recycled water quality.	0	0	0	0	0	0

5.2.1 Potable Water Quality

The treated potable water that DSRSD receives from Zone 7 is blended from various sources. It meets all federal and state drinking water requirements.

DSRSD is particularly interested in potable water quality parameters related to aesthetic issues, such as taste, odor and hardness. Taste and odor can come from total dissolved solids (TDS) and the minerals in the water, but is generally associated with algae blooms in surface water supplies. Hardness and a salty or bitter taste are generally associated with minerals in the groundwater. The groundwater supply from the Livermore-Amador Valley Main Basin is generally consistent in mineral quality, whereas the surface water supply can see large deviations in quality due to factors such as high and low surface water runoff and algae blooms. Because of the variety of Zone 7's water sources and the location of DSRSD's turnouts relative to Zone 7's distribution system, DSRSD receives a higher proportion of groundwater from Zone 7's supplies during the dry season, when Zone 7 pumps water from the Main Basin.

To address groundwater quality issues, Zone 7 recently constructed a wellhead demineralization facility at DSRSD's well site in the Mocho well fields (described in detail in Section 4.2). The demineralization facility uses a reverse osmosis membrane-based treatment system, which removes and exports concentrated minerals and salts from the Main Basin. The facility can treat up to 7.7 mgd of groundwater. After the mineral concentrate is removed, 6.1 mgd of demineralized water can be blended with other groundwater and surface water supplies for delivery to customers. Demineralization has improved the quality of water delivered to DSRSD.

5.2.1.1 Zone 7 Water Quality

The quality of water delivered to DSRSD depends on the various supplies available and Zone 7's treatment processes. In its 2010 UWMP, Zone 7 states that it does not anticipate that water quality will negatively impact its ability to provide a reliable supply of water over the next 20 years.⁶⁹ In Section 15 of its 2010 UWMP, Zone 7 provides water quality information related to its various sources. The discussion below is excerpted directly from Zone 7's 2010 UWMP.

IMPORTED SURFACE WATER SUPPLY⁷⁰

Imported surface water from the State Water Project (SWP) is by far Zone 7's largest water source, providing over 80 percent of the treated water supplied to retail customers. Much of this imported surface water is derived from the Feather River watershed, in the northern part

69. Ibid, Section 15, page 15-1.

70. Ibid, Section 15.1, pages 15-1-15.2.

of California, and ultimately flows through the Sacramento-San Joaquin Delta (Delta) before it is conveyed by the California Aqueduct and the South Bay Aqueduct (SBA) to Zone 7's water facilities.

Zone 7's other imported surface water supply, BBID, is also linked to the Delta: BBID diverts water from the Delta and provides water to Zone 7 via the SBA.

There are some important water quality considerations associated with the water that moves through the Delta. In 1982, DWR formed the Interagency Delta Health Aspects Monitoring Program to monitor water quality in the Delta for human health protection. The program was renamed the Municipal Water Quality Investigations Program (MWQI Program) in 1990. From a municipal water supply perspective, water quality issues in the Delta are associated with salinity from seawater intrusion; wastewater effluent discharges; agricultural drainages from the islands; and recreational activities. Water quality issues of specific concern to Zone 7 are:

- *Taste and odor (T&O)* - primarily a problem in the warmer months, when algae blooms may be present. It can affect supplies from the Delta and from Lake Del Valle. Algae produce geosmin and 2-methylisoborneol (MIB), which are key taste and odor-causing compounds in surface water supply. Zone 7 currently treats T&O using powdered activated carbon (PAC), which is of limited effectiveness under high levels of geosmin and MIB. High levels of T&O in surface water require a switch to groundwater supplies.
- *Total and dissolved organic carbon (TOC/DOC)* – levels of organic carbon affect the amounts of coagulant and disinfectant chemicals used at Zone 7's water treatment plants (WTPs), and therefore result in higher costs. In addition, the formation of disinfectant byproducts is dependent upon the amount of TOC/DOC. TOC/DOC levels have historically not affected the amount of imported surface water supply available to Zone 7.
- *Turbidity* – like TOC/DOC, turbidity affects the amounts of chemicals used at the WTPs and Zone 7's ability to meet drinking water standards. Turbidity levels have historically not affected the amount of imported surface water supply available to Zone 7.
- *Salinity or total dissolved solids (TDS)* – salinity is a water quality parameter that has significant impacts on SWP operations and the availability of water. To meet the salinity objectives in the Delta, water exports from the Delta may be restricted, reducing the amount of water supply available during certain times of the year.

Zone 7 and other SWP contractors are currently working with the DWR and other key stakeholders in the development of a "Delta Fix" to address the challenges—including water quality issues—related to the transport of water through the Delta. The Delta Habitat

Conservation and Conveyance Program (DHCCP) and the Bay Delta Conservation Plan (BDCP) are expected to increase the reliability of supplies from the Delta.

To protect water quality once the water from the Delta reaches the SBA, recipients of water from the SBA (Alameda County Water District, Santa Clara Valley Water District, and Zone 7, known collectively as the SBA Contractors) developed the SBA Watershed Protection Program Plan in 2008⁷¹. The SBA Watershed Protection Program Plan is designed to protect the SBA system, including Lake Del Valle and Bethany Reservoir, from identified potential contaminant sources (e.g., septic tanks) for urban water supply purposes, as well as agricultural, recreational, and environmental uses.

LOCAL SURFACE WATER RUNOFF⁷²

Runoff from the Arroyo del Valle watershed above Lake Del Valle is stored in the lake. Lake Del Valle is also used to store SWP imported surface water deliveries through late winter and spring. In general, the water quality of Arroyo del Valle runoff is good and does not affect the reliability of this water supply. As noted above, water collected from the local watershed is protected under the SBA Watershed Protection Program Plan.

LOCAL STORAGE⁷³

Zone 7 has three options for local storage: storage in Lake Del Valle, storage in the Main Basin and, in the future, surface storage in the Chain of Lakes. The Chain of Lakes will also be used for groundwater recharge.

The Main Basin is characterized by relatively good quality groundwater that meets all state and federal drinking water standards. Groundwater is chloraminated to maintain consistent disinfectant residual in the distribution system and to preserve delivered water quality. However, there has been a slow degradation of groundwater quality as evidenced by rising TDS and hardness levels over the last few decades. To address this problem, Zone 7 developed a Salt Management Plan (SMP)⁷⁴, which was approved by the Regional Water Quality Control Board in 2004. As part of this SMP, Zone 7 completed construction of a wellhead demineralization facility in 2009.

71. ESA, 2008. SBA Watershed Protection Program Plan.

72. Zone 7 Water Agency, 2010 Urban Water Management Plan, Section 15-2, page 15-2.

73. Ibid, Section 15.3, page 15-2.

74. Zone 7 Water Agency, Salt Management Plan, 2004.

NON-LOCAL STORAGE⁷⁵

In addition to local storage, Zone 7 also has storage contracts with two non-local groundwater-banking districts in Kern County: the Semitropic Water Storage District (Semitropic) and Cawelo Water District. Zone 7 stores water into these banks during non-drought conditions to have supply available during droughts.

The presence of elevated levels of arsenic in a portion of the Semitropic groundwater bank is a water quality issue that needs to be addressed. During a drought, Zone 7 will take an additional amount of water from the SWP equal to the amount requested from Semitropic. Semitropic will then replace this water downstream on behalf of Zone 7 by pumping water into the California Aqueduct for use by contractors downstream of Semitropic; the water quality of this “pump-in” water will therefore have an effect on these contractors. Arsenic criteria were established for this pump-in by the DWR Facilitation Group to mitigate any impacts to the downstream contractors, and DWR, Semitropic, and the banking partners have been testing arsenic treatment options since 2008. While the presence of arsenic in the Semitropic groundwater bank is likely to increase the cost of this water storage option, it is not likely to affect its overall reliability.

5.2.2 Recycled Water Quality

The recycled water that DSRSD distributes comes from DSRSD’s RWTF, which is described in Section 4.5.2. Wastewater effluent from DSRSD’s regional wastewater treatment plant is treated to produce Title 22 disinfected tertiary recycled water. DSRSD anticipates no significant changes to the land uses in DSRSD’s wastewater service area; therefore, it does not anticipate any changes to the quality of the wastewater effluent that it treats to recycled water quality. DSRSD’s water service area is over the fringe basin of the Livermore-Amador Valley, which is not used for potable water supplies; thus, its recycled water distribution is not limited by its impact to groundwater supplies. For all of these reasons, DSRSD does expect recycled water quality issues to impact its ability to reliably deliver recycled water to its customers.

5.3 Water Shortage Contingency and Drought Plan

Water Code Sections 10632(a), 10632(c), 10632(d), 10632(e), 10632(f), 10632(g), and 10632(h)

DSRSD’s Water Shortage Contingency and Drought Plan addresses situations when catastrophic water supply interruptions occur due to regional power outage, earthquake, or other disasters; and when drought occurs due to environmental, climatic, or legal issues. The

75. Zone 7 Water Agency, 2010 Urban Water Management Plan, Section 15.4, page 15-3.

plan is based on DSRSD Ordinance No. 323, DSRSD's Emergency Response Plan (ERP), and DSRSD Code Section 4.10.030(C), which are described in further detail below. The adoption of this Water Shortage Contingency and Drought Plan is concurrent with the adoption of DSRSD's 2010 UWMP and supersedes any previous water shortage contingency plan.

The DSRSD Board of Directors adopted Ordinance No. 323⁷⁶ in June 2009 to update both its water conservation program and its program for managing DSRSD water supplies during any water shortage condition declared by the DSRSD Board of Directors. The ordinance also established regulations and restrictions on the delivery and consumption of water and penalties for ordinance violations during a declared water shortage. A copy of Ordinance No. 323, as well as DSRSD's adopted Water Conservation Program⁷⁷, is provided in Appendix P. This ordinance addresses both water emergencies (catastrophic water interruptions) and drought conditions. During water emergencies, DSRSD Ordinance No. 323 authorizes the DSRSD General Manager to declare a water emergency and initiate implementation of the ERP. The ERP provides DSRSD with a standardized response and recovery protocol to prevent, minimize, and mitigate injury and damage resulting from emergencies or disaster of natural or man-made origins. DSRSD updates the ERP periodically to ensure that newly developed parts of its service area and the associated infrastructure are taken into account.

When DSRSD recodified its code in November 2010, Section 4.10.030(C) (included in Appendix Q) was added to regulate water use during any type of water shortage. This provision authorizes the DSRSD general manager to prescribe and enforce rules governing water allocation and use of water. It also provides the DSRSD general manager with guidelines for allocating water supply during shortages.

76. District Ordinance No. 323, An Ordinance Repealing Ordinance Nos. 242 and 244, Establishing a Water Conservation Program and a Program for Management of the Water Supplies of the District During Any Water Shortage Condition declared by the Board of Directors of DSRSD and Establishing Regulations and Restrictions on the Delivery and Consumption of Water and Penalties for Ordinance Violations During a Declared Water Shortage Condition, adopted by the District Board of Directors on June 2, 2009.

77. Adopted by Resolution 20-09, June 16, 2009.

5.3.1 Stages of Action

Water Code Section 10632(a), 10632(c)

The ERP and the Water Conservation Program adopted in DSRSD Ordinance 323 include four stages of water demand reductions, summarized in Table 5-9, which can be implemented depending on the severity of conditions. The plan does not provide numeric targets for triggering a shortage stage, nor specific reduction percentages, except in emergency situations. The intent is to maintain some degree of flexibility for DSRSD to respond to water supply shortages. Numeric minimum targets provide a guideline for quick decision-making only during emergencies.

Table 5-9. Stages to Address Water Supply Shortages (DWR Table 35)		
Stage No.	Water Supply Conditions¹	% Shortage²
1	Identifiable events lead to a reasonable probability that in the next few years, DSRSD potable water supplies will not be adequate to meet the normal water demands and requirements of DSRSD's water customers and users.	5% or greater
2	Identifiable events lead to a reasonable probability that in the current or upcoming year, DSRSD potable water supplies will not be adequate to meet the normal water demands and requirements of DSRSD's water customers and users.	15% or greater
3	Identifiable events lead to a reasonable conclusion that in the current year, DSRSD potable water supplies will not be adequate to meet the normal water demands and requirements of DSRSD's water customers and users.	30% or greater
4	Stage 3 water shortage provisions have been in effect and water use reduction have not been achieved to maintain adequate water supply for health and safety, or when new events require greater water conservation.	50% or greater
¹ Stages as defined in DSRSD Ordinance 323.		
² In accordance with ERP Action Plan 9 - Water Supply Interruption. To be followed only during emergency		

Normal supply conditions are those periods when DSRSD water supplies are adequate or more than adequate to meet the ordinary demands and requirements of DSRSD's water customers for the current year and a reasonable planning horizon, typically five years.⁷⁸ A water shortage condition occurs when the supply of potable water available to DSRSD for distribution and sale may not be adequate to meet ordinary water demands without reducing the supply to the extent that water supply is insufficient to meet human consumption, sanitation, fire protection, and other beneficial uses. During non-emergency times, when DSRSD anticipates or identifies that water supplies (as a result of climatic conditions, regulatory changes, legal mandates, environmental regulations, or any other cause) may not be adequate to meet the normal water supply needs of its customers, the DSRSD Board of Directors may determine that a water shortage exists and consider a resolution to declare a water shortage condition and associated stage for water conservation.

For example, the DSRSD Board of Directors declared Stage 1 Water Shortage Condition and requested 20 percent voluntary water conservation by resolution in June 2009 in response to reduced deliveries from the SWP and a third year of below normal precipitation. A copy of Resolution 34-09 is included in Appendix R. In form, this resolution provides a template for any future resolution in situations where the DSRSD Board of Directors needs to declare a water shortage.

During times of emergency, the DSRSD general manager is authorized to declare a water emergency and implement the provisions in the ERP, including appropriate action plans to address imminent water supply shortages.⁷⁹ When an imminent water supply interruption occurs, the DSRSD general manager may declare the necessary stage for water conservation.

5.3.1.1 Stage 1 and 2 – Voluntary Water Conservation

Stage 1 water conservation is voluntary. Stage 2 water conservation may also be voluntary, as deemed appropriate by the DSRSD Board of Directors. The Board declares these stages when it determines, with reasonable probability, that the water supply may not be adequate to meet all demands in the current year or next few years. DSRSD may be able to deliver its customers' normal water demands but wants help from customers to ensure adequate supply. At these stages, DSRSD uses public outreach and customer service to encourage the best management practices in DSRSD's water conservation program, as described in Section 6. Because water reduction measures are voluntary, no penalties are applied.

78. DSRSD normally provides Zone 7 a five-year water demand projection and Zone 7 responds with confirmation that it will be able to meet the projected demand.

79. DSRSD Ord. 323.

5.3.1.2 Stage 2, 3, and 4 – Mandatory Prohibitions and Restrictions

Water Code 10632(d) and 10632 (e)

In Stage 2, water conservation may be declared mandatory. In Stages 3 and 4, water conservation is always mandatory. Stage 2 water conservation is declared mandatory if Stage 2 voluntary water conservation targets are not met and when, due to definable events, there is greater certainty water supplies will be inadequate to meet customer demands during the current year or upcoming year. Stage 3 mandatory water conservation is declared when, due to definable events, there is firm certainty that the water supply will be inadequate to meet customers' demands in the current year. If Stage 3 mandatory water conservation is in effect and the reduction goal is not being met, or if a new definable event occurs that requires increasing the goal, the DSRSD Board of Directors may declare Stage 4 mandatory water conservation. During times of imminent water supply interruption, the DSRSD general manager is authorized to make a determination and declare an appropriate stage of water conservation in response to the emergency at hand. If water supplies are reduced by 50 percent for a single year, the DSRSD Board of Directors may declare Stage 4 water conservation and require the prohibitions and water consumption reduction measures described below to be mandatory.

In Table 5-10, mandatory water prohibition measures are itemized, along with the stage under which each prohibition becomes mandatory. Stage 2 measures become mandatory if the DSRSD Board of Directors declares mandatory Stage 2 water conservation. In Table 5-11, water consumption reduction measures are itemized, along with the stage under which each measure takes effect. If a measure is declared mandatory for a lower level stage, it is also mandatory for higher stage levels.

Table 5-10. Water Shortage Contingency — Mandatory Water Prohibition Measures (DWR Table 36)	
Mandatory Prohibitions¹	Stage When Prohibition Becomes Mandatory²
Street washing (CII)	
Prohibit use of potable water, unless necessary for public health and safety	Stage 3
Landscape irrigation (SFR, MFR, CII)	
No turf irrigation, hand water other landscaping only on Saturday or Sunday	Stage 4
Public swimming pools (SFR, MFR, CII)	
Prohibit drain and refill, unless required for health or structural needs	Stage 4
Water theme parks (CII)	
Shut down; prohibit use of any water	Stage 4
Private swimming pools, spas, fountains, ponds (SFR, MFR, CII)	
Prohibit potable water use for ornamental ponds and fountains; drain and refill only for health or structural needs	Stage 3
Prohibit draining and refilling and initial filling of swimming pools and spas	Stage 4
Private pavement (SFR, MFR, CII)	
Prohibit use of potable water to wash pavement, unless required for health and safety	Stage 3
Private exterior washing of autos, boats, buildings (SFR, MFR, CII)	
Prohibit washing with potable water	Stage 4
New or additional service (SFR, MFR, CII)	
Prohibition of connection subject to SB610 definition	Stage 3
Water for construction (CII)	
Only recycled water (potable can be used for public health and safety projects) for construction meters	Stage 3
Laundromats (CII)	
Prohibit use of non-efficient washing machines	Stage 4
¹ SFR: single-family resident ; MFR: multifamily resident; CII: commercial, industrial, institutional customers.	
² Stage 2 measures are mandatory if DSRSD Board of Directors or general manager declares mandatory Stage 2 water conservation.	

Table 5-11. Water Shortage Contingency — Consumption Reduction Methods (DWR Table 37)	
Consumption Reduction Methods	Stage When Method Takes Effect
Landscape irrigation (SFR, MFR, CII)¹	
Shut-off nozzles; no runoff, over spray, or saturation of landscape	Stage 1
Irrigate from 9 p.m. to 6 a.m.; train/educate regarding water conserving irrigation systems and dry climate plants	Stage 1
Irrigate only on odd/even days (per odd/even address); turn off auto sprinklers when raining	Stage 2
Irrigate only Mondays and Thursdays	Stage 3
No turf irrigation, hand water other landscaping only on Saturday or Sunday	Stage 4
Public swimming pools (SFR, MFR,CII)	
Must be leak proof	Stage 2
Cover when not in use; equip with recirculating pump	Stage 3
Drain and refill only per health or structural needs	Stage 4
Water theme parks (CII)	
Require they reclaim and recycle water	Stage 3
Private swimming pools, spas, fountains, ponds (SFR, MFR, CII)	
Must be leak proof	Stage 1
Cover when not in use; equip with recirculating pump	Stage 2
Private pavement (SFR, MFR, CII)	
Use broom and bucket	Stage 2
Private exterior washing of autos, boats, buildings (SFR, MFR, CII)	
Use hose with shut-off nozzle and do so on a permeable surface	Stage 1
Use bucket, no more than once a month; encourage use of commercial wash services that recycle water	Stage 2
Only wash vehicles at commercial establishments that recycle water; use broom on buildings, pavement	Stage 3
New or additional service (SFR, MFR, CII)	
Connection subject to SB610 definition	Stage 3
Water for construction (CII)	
Use recycled water if cost effective; otherwise potable water use okay	Stage 1
Only recycled water (potable can be used for public health and safety projects) for construction meters	Stage 3
Restaurants (CII)	
Offer rebates on low flow rinse nozzles; post water conservation messages on bathroom mirrors	Stage 1
Require use of low flow rinse nozzles; require they serve water only on request	Stage 2
Laundromats (CII)	
Use only water-efficient washing machines	Stage 4

¹ SFR: single-family resident ; MFR: multifamily resident; CII: commercial, industrial, institutional customers.

5.3.2 Penalties and Charges

Water Code Section 10632(f)

When mandatory water use reduction is declared at any of the above stages, the DSRSD Board of Directors will adopt a progressive schedule of fines to be levied against customers and users for successive violations of water use restrictions established in Stages 3 and 4. Additionally, water customers and users are subject to Chapter 1.30, Enforcement, of the DSRSD Code, which provides general penalties, remedies for violations, penalties of increasing severity, and imposition of costs. Violations may be punishable as misdemeanors or infractions, depending on the severity of the violation. The DSRSD general manager is authorized to apply penalties as he or she deems appropriate, including flow restriction, submetering, and discontinuance of water service, until the violation is corrected. DSRSD may also seek damage and/or remedies, including fees or fines and the amount of costs incurred by DSRSD to investigate and correct the violation. In Table 5-12, penalties and charges and the stage when they take effect are summarized.

Table 5-12. Water Shortage Contingency — Penalties and Charges (DWR Table 38)	
Penalties or Charges	Stage When Penalty Takes Effect
Penalty/fines for excess use	Stage 3
Charge for excess use	Stage 3
Cost to investigate and correct violations	Stage 3
Flow Restriction	Stage 4
Submetering	Stage 4
Discontinuance of Service	Stage 4

5.3.3 Emergency Actions

Water Code Section 10632(c)

Water supplies may be interrupted in the future due to a regional power outage, a natural disaster such as an earthquake, or an accidental pipeline break. The ERP includes action plans that are to be used in response to such events and incidents. The action plans for various emergencies leading to water supply interruptions is included in Appendix S. Action Plan 9 specifically outlines plans to manage water supply for a range of events, including situations involving catastrophic loss of water supply. Below are several situations that DSRSD has considered.

5.3.3.1 Emergency Interconnections

DSRSD currently has five emergency pipeline interties, three with EBMUD and two with the City of Pleasanton, for rapid emergency response. The interties are strictly for emergency conditions, such as a major pipeline break, supply contamination, or interruption of deliveries due to earthquake, flood, or other disaster. These connections would allow either agency to obtain water from the other agency during an emergency. DSRSD is currently exploring an emergency intertie with the City of Livermore.

5.3.3.2 No Water Available from the SWP

DSRSD analyzed conditions in which no water was available from the SWP. This could occur if the South Bay Aqueduct was inoperable due to maintenance or was damaged during an earthquake. Water supplies from the SWP could also be limited or unavailable during a future drought. If no water was available from the SWP, Zone 7 would need to meet customer demand with groundwater and available local water stored in Lake Del Valle. The worst disruption to SWP deliveries would likely result from a moderate to a large earthquake, causing multiple Delta islands levee failures and cessation of exports from the Delta of up to a year. Under this scenario and under current conditions, Zone 7 estimates that it would be able to make full deliveries to the retailers during non-summer months using a combination of groundwater and Arroyo del Valle runoff stored in Lake Del Valle. During the peak demand of the summer months, however, Zone 7 will need to reduce deliveries to the retailers, including DSRSD. Zone 7 analysis shows that Zone 7 has sufficient groundwater supply and pumping ability to serve the indoor water use needs of the service area over a one-year period; the availability of water supply for outdoor water use during the summer months will depend on the amount of water available in Lake Del Valle. Depending on timing and degree of recovery, DSRSD might enact any of the stages of water shortage conditions discussed in Section 5.3.1.

5.3.3.3 No Water Available from Zone 7

DSRSD's turnouts are fed by two major pipelines from Zone 7. One pipeline has been out of service two times in the recent past, once due to scheduled maintenance and once due to a pipeline break. If one or both pipelines were out of service for a significant period, DSRSD would need to receive water from its emergency interties with EBMUD, the City of Pleasanton, or any future emergency interties. Depending on the availability of water from these sources, DSRSD might need to enact various water shortage stages discussed in Section 5.3.1 to deal with a shortfall.

5.3.3.4 Regional Electrical Power Failure

If electrical power was not available for a prolonged period of time, DSRSD would continue to receive water from a number of sources. DSRSD could receive treated water (by gravity flow) stored in Zone 7's clearwells located at the water treatment plants, gravity flow from potable and recycled water storage reservoirs owned and operated by

DSRSD, and water from its emergency interties with the City of Pleasanton and EBMUD. Also, a significant number of Zone 7's production wells and other DSRSD and Zone 7 pump stations are equipped with backup diesel generators. Therefore, even if electrical power fails, backup power supplies are available to distribute water supplies.

At two emergency interconnect locations with EBMUD (on Alcosta Boulevard, San Ramon), EBMUD's water system is at a higher pressure than DSRSD's and water would naturally flow into DSRSD's system. Pleasanton's system is at a lower pressure and portable booster pumps would be required to utilize the Pleasanton interties. Water from these sources would enter DSRSD's Pressure Zone 1 and would be pumped, through existing pump stations with emergency power generating equipment, into the higher elevations of DSRSD's service area. Again, DSRSD might need to enact various water shortage stages discussed in Section 5.3.1, depending on the availability of supplies during a power outage.

5.3.3.5 Earthquake

Water system infrastructure, including treatment plants, pump stations, storage tanks, and pipelines, can be damaged during a strong earthquake. DSRSD's facilities, as well as Zone 7's facilities, have been constructed in accordance with the applicable building codes to minimize potential damage during an earthquake. Some facilities may be expected to be damaged as the result of a strong earthquake; however, multiple turnouts from the Zone 7 supply system and DSRSD water distribution pipelines have been looped so that damaged portions of the DSRSD system can be quickly isolated and repaired. DSRSD's design criteria also requires water system looping in neighborhoods to ensure water service reliability. In addition, as discussed previously, DSRSD has five emergency interties (three with EBMUD and two with the City of Pleasanton) to provide water during an emergency. Again, DSRSD may need to enact various water shortage stages discussed in Section 5.3.1, depending on timing and degree of recovery.

5.3.3.6 Emergency Water Supply for Dougherty Valley

Water stored in the Main Basin can be used for meeting demands in Dougherty Valley during emergency conditions. Operationally, Zone 7 is planning to store water in the Main Basin for use in the Dougherty Valley. This annual storage will allow Zone 7 to meet demands in the Dougherty Valley which do not match the diversion pattern of the Berrenda Mesa water entitlement transfer. No carryover of water stored annually in the Main Basin for Dougherty Valley will be allowed from year to year. Nevertheless, Main Basin groundwater will be available for use in Dougherty Valley during emergency conditions.

Under conditions that interrupt delivery of water from the State Water Project, Zone 7 and its retailers with access to groundwater must meet customer demand with groundwater and any local water available in Lake Del Valle.

5.3.4 Estimated Minimum Water Supply for Next Three Years

Water Code Section 10632(b)

In Table 5-13, the minimum water supply available during each of the next three water years are estimated based on the driest three-year historic sequence for DSRSD’s water supply. The estimated minimum water supply available is equivalent to the estimated DSRSD water demands from Zone 7 between 2010 and 2015. As discussed in Section 5.1.2, DSRSD’s potable water supply’s reliability is subject to its water supply contract with Zone 7 and Zone 7’s water supply reliability policy (Appendix J). Zone 7’s reliability policy is to provide 100 percent of DSRSD’s water demands through average, single dry, and multiple dry years, and is expected to remain in place within a reasonable planning period. Historically, Zone 7 has been able to provide DSRSD 100 percent of its water demand requests, regardless of climatic limitations. DSRSD’s recycled water supply is not subject to climatic limitations. Therefore, it is unaffected by the historic driest three-year water supply.

Table 5-13. Minimum DSRSD Water Supply Available Based on Driest Three-Year Historic Sequence (AFA) (DWR Table 31)			
Water Type	Year		
	2011	2012	2013
Potable Water ¹	10,020	10,740	11,460
Recycled Water ²	1,940	2,080	2,220
¹ Interpolated from DSRSD potable water demands between 2010 and 2015, Table 3-9.			
² Interpolated from DSRSD recycled water demands between 2010 and 2015, Table 3-9.			

5.3.5 Mechanism For Determining Actual Water Use Reductions

Water Code Section 10632(i)

DSRSD’s water supply from Zone 7 is metered at the turnouts, as described in Section 2. Water delivered to customers is metered at the connection points, as described in Section 3. Therefore, DSRSD is able to determine actual reductions in water use pursuant to the urban water shortage contingency analysis.

Meters at each Zone 7 turnout are read daily to provide DSRSD with overall water consumption information. If DSRSD initiates a water shortage stage during a drought, actual reductions in water use can be determined by comparing monthly water use totals during the drought with their corresponding totals from previous years. In addition, customers could monitor their personal water use by obtaining a three-year history of their water use from DSRSD. Water uses within DSRSD’s service area are normally metered and billed on a bimonthly basis. During Stages 2, 3, and 4, DSRSD could read meters on a monthly basis to provide customers with more timely information on water use.

Additionally, DSRSD personnel routinely perform computer searches on billings to identify customers that consume more than normal amounts of water. Customers who use excessive water relative to their neighbors are sent conservation notices and related information. The DSRSD billing system also provides a means to determine consumption by basic user categories, which also can be used to monitor water use.

5.3.6 Impacts of Drought Actions on Revenues and Expenditures

DSRSD has a water rate structure which charges a bimonthly fixed service charge and a bimonthly water quantity use charge. The bimonthly water quantity use charge is based on the actual quantity of water used. Water rates are also tiered, so that higher water rates apply to greater water use, providing an incentive to conserve. DSRSD maintains a rate stabilization fund to avoid spikes in water rates due to operational costs.

To ensure that DSRSD can cover operating expenses during any type of water shortage, the DSRSD Board of Directors has established rates for each water shortage stage in accordance with DSRSD Ordinance 323. The water rate is effective the date that the stage is declared and applicable for the duration of the stage. DSRSD may also incur costs in enforcing mandatory water use reduction measures. As described in Section 5.3.2, DSRSD may recover enforcement costs, including labor costs and materials, from the water customer or user in violation, in accordance with DSRSD Code and Ordinance 323.

DSRSD water customers also pay Zone 7 water rates. Zone 7 maintains a drought contingency fund, which is a rate stabilization fund that can be utilized during drought situations to minimize impacts on water rates as a result of drought conditions.



Demand Management Measures

DSRSD has long been committed to reducing the demand for potable water through water conservation. DSRSD has been a member of the California Urban Water Conservation Council (CUWCC) since 1991 and is an original signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California (CUWCC MOU), which was adopted on September 17, 1991. DSRSD has been implementing various Best Management Practices (BMPs) for water conservation since 1991, and has been submitting biennial reports to the CUWCC since 1992. Copies of DSRSD's Best Management Report Filings to CUWCC for 2005/06, 2007/08, and 2009/10 are provided in Appendix T.

In 2009, the CUWCC restructured its BMPs to group them according to type. The 14 BMPs have now been reorganized into two primary categories: foundational BMPs and programmatic BMPs. Although the BMP names and organization have been modified, they still correlate to the demand management measures (DMMs) identified in the UWMP Act (Water Code Section 10631(f)). An overview of the reorganization of the BMPs is provided in Table 6-1.

AB 1420 (Laird, Stats. 2007, ch. 628) amended the UWMP Act, (Water Code Section 10610 et seq.). Effective January 1, 2009, AB 1420 requires that the terms of, and eligibility for, any water management grant or loan made to an urban water supplier and awarded or administered by DWR, State Water Board, or California Bay-Delta Authority (CBDA) or its successor agency, be conditioned on the implementation of the DMMs described in Water Code Section 10631(f). These DMMs correspond to the 14 BMPs listed and described in the CUWCC MOU. Based on this, DWR has consulted with the CUWCC and appropriate funding agencies and determined that it will equate the DMMs with the BMPs described in the CUWCC MOU for loan and grant funding eligibility purposes.

DSRSD's water conservation program conforms, to the fullest extent practical, to the BMPs. An overview of DSRSD's current water conservation policies and programs as they relate to the BMPs is provided in Table 6-2. Descriptions of its water conservation policies and programs follow. As discussed in Section 3.4.1, DSRSD will monitor the overall effectiveness of its water conservation activities. DSRSD may implement additional demand reduction programs, as appropriate, based on affordability and certainty of reduction, should it determine that further reductions are required to meet and maintain its 2020 urban water use target. Additional water conservation activities that may be implemented include continuing programs such as school education programs regarding water conservation, or annual initiatives to promote a specific conservation practice or practices.

Table 6-1. CUWCC Reorganization of Best Management Practices

Previous List of Best Management Practices	Revised List of Best Management Practices Per California Urban Water Conservation Council MOU
BMP 1: Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers	<p style="text-align: center;">Foundational BMPs</p> <p><u>1. Utility Operations Programs</u></p> <p>BMP 1.1.1 Conservation Coordinator (formerly BMP 12)</p> <p>BMP 1.1.2 Water Waste Prevention (formerly BMP 13)</p> <p>BMP 1.1.3 Wholesale Agency Assistance Programs (formerly BMP 10)</p> <p>BMP 1.2 Water Loss Control (formerly BMP 3)</p> <p>BMP 1.3 Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections (formerly BMP 4)</p> <p>BMP 1.4 Retail Conservation Pricing (formerly BMP 11)</p> <p><u>2. Education Programs</u></p> <p>BMP 2.1 Public Information Programs (formerly BMP 7)</p> <p>BMP 2.2 School Education Programs (formerly BMP 8)</p> <p style="text-align: center;">Programmatic BMPs</p> <p><u>3. Residential Programs</u></p> <p>BMP 3.1 Residential Assistance Program (formerly BMPs 1 and 2)</p> <p>BMP 3.2 Landscape Water Survey (formerly BMP 1)</p> <p>BMP 3.3 High-efficiency Clothes Washers (HECWs) (formerly BMP 6)</p> <p>BMP 3.4 WaterSense Specification (WSS) toilets (formerly BMP 14)</p> <p>BMP 3.5 WaterSense Specifications for residential development</p> <p><u>4. Commercial, Industrial, and Institutional Programs</u></p> <p>BMP 4 Commercial, Industrial, and Institutional (CII) (formerly BMP 9)</p> <p><u>5. Landscape Programs</u></p> <p>BMP 5 Landscape (formerly BMP 5)</p>
BMP 2: Residential Plumbing Retrofit	
BMP 3: System Water Audits, Leak Detection and Repair	
BMP 4: Metering with Commodity Rates for All New Connection and Retrofit of Existing Connections	
BMP 5: Large Landscape Conservation Programs and Incentives	
BMP 6: High-Efficiency Clothes Washing Machine Financial Incentive Programs	
BMP 7: Public Information Programs	
BMP 8: School Education Programs	
BMP 9: Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts	
BMP 10: Wholesale Agency Assistance Programs	
BMP 11: Retail Conservation Pricing	
BMP 12: Conservation Coordinator	
BMP 13: Water Waste Prohibition	
BMP 14: Residential ULFT Replacement Programs	

Table 6-2. Summary of DSRSD's Water Conservation Policies and Programs

BMP Name		BMP Description	District Policies and Programs
Fundamental BMPs	Utility Operations Programs	BMP 1.1.1 Conservation Coordinator (formerly BMP 12)	<ul style="list-style-type: none"> DSRSD Water Conservation Manager and Coordinator and other District staff are responsible for implementation, tracking and reporting of water conservation activities.
		BMP 1.1.2 Water Waste Prevention (formerly BMP 13)	<ul style="list-style-type: none"> Water waste prohibitions are in place Additional drought restrictions would be enacted by DSRSD if water supply conditions required additional water conservation measures (DSRSD Ordinance No. 323)
		BMP 1.1.3 Wholesale Agency Assistance Programs (formerly BMP 10)	<ul style="list-style-type: none"> On-going coordination with Zone 7 with regards to water demand projections and water supply availability and reliability Zone 7 provides assistance with rebate programs
		BMP 1.2 Water Loss Control (formerly BMP 3)	<ul style="list-style-type: none"> Water system audit and accounting for water losses vs. system input is a continuous process by DSRSD staff Leak detection and repair program is on-going by DSRSD Field Operations staff
		BMP 1.3 Metering with Commodity Rates for All New Connection and Retrofit of Existing Connections (formerly BMP 4)	<ul style="list-style-type: none"> DSRSD billing at commodity rates is on-going, with a three-tiered rate structure for residential customers, seasonal rates for commercial customers, and special rates for potable irrigation customers; potable water rates increase with the various stages of the District's Water Shortage Contingency Plan Meter retrofit program is on-going as determined by meter throughput and age
		BMP 1.4 Retail Conservation Pricing (formerly BMP 11)	
	Education Programs	BMP 2.1 Public Information Programs (formerly BMP 7)	<ul style="list-style-type: none"> Public information and education programs are on-going, including water bill inserts, consumption data on bill, web site resources, speakers for community groups, booths and displays at public events, media outreach, magnetic vehicle signs, and facility tours Commercial and institutional programs include distribution of restroom mirror stickers and table signs and retrofit of urinals in schools and other institutional customers
		BMP 2.2 School Education Programs (formerly BMP 8)	<ul style="list-style-type: none"> Developed water conservation lesson plans for each grade level Zone 7 Water Science Schools Program is on-going, making classroom presentations at DSRSD schools Participate in local events (math and science conference, science fair, Tri-Valley Science and Engineering Fair)
Programmatic BMPs	Residential Programs	BMP 3.1 Residential Assistance Program (formerly BMPs 1 and 2)	<ul style="list-style-type: none"> Residential water surveys are on-going (including letters sent to top 100 consumption single-family customers), as well as requirements for low-flow fixtures, rebate programs, and distribution of retrofit kits High-efficiency toilet (HET) rebate program is on-going High-efficiency clothes washer rebate program is on-going On-going low-flow device give-away program Compliance with SB 407 legislation as required (replacement of non-water-conserving plumbing fixtures)
		BMP 3.2 Landscape Water Survey (formerly BMP 1)	<ul style="list-style-type: none"> Residential water surveys include evaluation of irrigation systems DSRSD web site provides tips and guidelines for irrigation scheduling Pilot Smart Irrigation Controller Program is on-going
		BMP 3.3 High-efficiency clothes washers (HECWs) (formerly BMP 6)	<ul style="list-style-type: none"> On-going rebate program in conjunction with Zone 7 and PG&E On-going One Stop Rebate Program in conjunction with CUWCC
		BMP 3.4 WaterSense Specification (WSS) toilets (formerly BMP 14)	<ul style="list-style-type: none"> High Efficiency Toilet (HET) Rebate Programs are on-going
		BMP 3.5 WaterSense Specifications for residential development	<ul style="list-style-type: none"> On-going compliance with plumbing code standards and green building standards (City of Dublin Municipal Code Chapter 7.94)
	Commercial, Industrial, and Institutional Programs	BMP 4 Commercial, Industrial, and Institutional (CII) (formerly BMP 9)	<ul style="list-style-type: none"> On-going requirements for use of low-flow fixtures, water efficient landscapes, and recycled water for irrigation Audits for CII customers performed upon request School water use audits conducted in coordination with Zone 7 and Dublin Unified School District DSRSD staff participate in City of Dublin planning and development process for new commercial/industrial development Compliance with SB 407 legislation as required (replacement of non-water-conserving plumbing fixtures) On-going One Stop Rebate Program offering HET and high-efficiency (HE) urinal rebates to CII customers On-going HET and HE urinal rebate program in conjunction with Zone 7
	Landscape Programs	BMP 5 Landscape (formerly BMP 5)	<ul style="list-style-type: none"> DSRSD offers landscape surveys to its dedicated irrigation customers; large landscape audit program developed in September 2009 in coordination with Zone 7 and the Tri-Valley Water Retailers DSRSD Ordinance No. 301 requires use of recycled water for irrigation of large new landscaped areas; recycled water users are required to be licensed and submit quarterly reports to DSRSD; DSRSD staff performs periodic surveys City of Dublin Ordinance No. 18-92 Water Efficient Landscape Ordinance in place since 1992 (City of Dublin Municipal Code Chapter 8.88) DSRSD Water Conservation Demonstration Garden provided adjacent to District offices Irrigation Equipment Rebate Pilot Program started 2010 in conjunction with Zone 7 Large Landscape Program for schools planned in coordination with Zone 7

6.1 Foundational BMPs

The Foundational BMPs are considered to be essential water conservation activities by any utility and are summarized in Table 6-3. Please note that the BMP numbering below uses the specific numbers designated by the CUWCC. They are not section numbers.

Table 6-3. Summary of Foundational BMPs		
Foundational BMP Name	Foundational BMP Program	Former BMP/DMM Number
1. Utility Operations Programs	BMP 1.1.1 Conservation Coordinator	formerly BMP 12
	BMP 1.1.2 Water Waste Prevention	formerly BMP 13
	BMP 1.1.3 Wholesale Agency Assistance Programs	formerly BMP 10
	BMP 1.2 Water Loss Control	formerly BMP 3
	BMP 1.3 Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections	formerly BMP 4
	BMP 1.4 Retail Conservation Pricing	formerly BMP 11
2. Education Programs	BMP 2.1 Public Information Programs	formerly BMP 7
	BMP 2.2 School Education Programs	formerly BMP 8

DSRSD's activities related to these Foundational BMPs are described below.

BMP 1.1.1 Conservation Coordinator

(formerly BMP/DMM 12: Water Conservation Coordinator)

Current/Planned Program

The Assistant General Manager/District Engineer is the Water Conservation Manager for DSRSD and the Clean Water Program Specialist is the Water Conservation Coordinator. In addition, other departments throughout DSRSD devote a significant amount of time on water conservation such as the Public Information, Customer Services, and Engineering Divisions. Different DSRSD employees are responsible for the coordination and implementation of various DMMs and BMPs. DSRSD's Water Conservation Coordinator obtains periodic updates from staff members in order to prepare and submit biannual reports to the CUWCC.

Effectiveness Evaluation

DSRSD evaluates the effectiveness of this program by developing and maintaining effective working relationships among conservation staff.

Implementation Schedule

- Water Conservation Coordinator (DSRSD): On-going

BMP 1.1.2 Water Waste Prevention

(formerly BMP/DMM 13: Water Waste Prohibitions)

Current/Planned Program

In June 1991, DSRSD instituted Ordinance No. 242⁸⁰ to prevent water waste. In November 1991, DSRSD adopted Ordinance No. 244⁸¹ amending the prohibitions included in Ordinance No. 242. These two ordinances established four water conservation stages, prohibitions and mandatory requirements, and suggested water conserving guidelines for each conservation stage.

In June 2009, DSRSD adopted Ordinance No. 323⁸² which repealed Ordinance Nos. 242 and 244, established an updated water conservation program and a program for management of its water supplies during any water shortage condition declared by the DSRSD Board of Directors, and established regulations and restrictions on the delivery and consumption of water and penalties for ordinance violations during a declared water shortage condition. Additional discussion on the specific prohibitions for declared water shortage conditions is provided in Section 5. A copy of Ordinance No. 323, as well as the DSRSD's adopted Water Conservation Program, is provided in Appendix P.

81. District Ordinance No. 242, Ordinance Determining and Declaring Water Shortage Emergency, Establishing Regulations and Restrictions on the Delivery and Consumption of Water, and Establishing Penalties for Violations Thereof, adopted by the District Board of Directors on June 4, 1991. Repealed by District Ordinance No. 323 in June 2009.

81. District Ordinance No. 244, Ordinance Amending Section 6. of Ordinance No. 242, Relating to Certain Prohibitions on the Use of Water During Water Shortage Emergency, adopted by the District Board of Directors on November 5, 1991. Repealed by District Ordinance No. 323 in June 2009.

82. District Ordinance No. 323, An Ordinance Repealing Ordinance Nos. 242 and 244, Establishing a Water Conservation Program and a Program for Management of the Water Supplies of the District During Any Water Shortage Condition declared by the Board of Directors of DSRSD and Establishing Regulations and Restrictions on the Delivery and Consumption of Water and Penalties for Ordinance Violations During a Declared Water Shortage Condition, adopted by the District Board of Directors on June 2, 2009.

In June 2007, in response to drought conditions in California and Delta pumping restrictions on State Water Project (SWP) deliveries, DSRSD began asking customers to voluntarily reduce potable water use by 10 percent. In July 2009, due to the on-going drought conditions and continued SWP pumping restrictions, DSRSD declared a Stage 1 water shortage based on its updated water conservation plan and asked all customers to voluntarily reduce water use by 20 percent.⁸³

Effectiveness Evaluation

DSRSD will continue to measure the effectiveness of this program by the reduction in water use compared to pre-drought conditions. In the 12 months ending December 2010, average water use per DSRSD account declined by 21.1 percent (compared to the pre-drought period from July 2006 through June 2007), equating to a total savings of 811 million gallons of potable water in the 12 month period.⁸⁴

Implementation Schedule

- Water waste prohibitions (DSRSD): on-going
- Additional drought restrictions: would be enacted by DSRSD if water supply conditions required additional conservation measures (see Section 5: Water Supply Reliability and Water Shortage Contingency Planning).

BMP 1.1.3 Wholesale Agency Assistance Programs

(formerly BMP/DMM 10: Wholesale Agency Programs)

Current/Planned Program

DSRSD purchases treated water from Zone 7, which serves as the water wholesaler in the Tri-Valley area, providing wholesale treated water supplies to DSRSD, the City of Pleasanton, the City of Livermore, and the California Water Service Company-Livermore District. DSRSD and the other retailers work closely with Zone 7 in developing water demand projections and understanding water supply availability and reliability. Zone 7 also provides assistance to the water retailers with school education programs and rebate programs (see further discussion below).

83. Resolution 20-09, June 16, 2009.

84. Source: DSRSD Water Conservation Tracking spreadsheet updated January 1, 2010, provided by Stan Kolodzie.

Effectiveness Evaluation

DSRSD evaluates the effectiveness of this program by developing and maintaining effective working relationships between DSRSD and Zone 7 and with the other retailers in the Tri-Valley area.

Implementation Schedule

- Coordination with water wholesaler (Zone 7): on-going

BMP 1.2 Water Loss Control

(formerly BMP/DMM 3: System Water Audits, Leak Detection and Repair)

Current/Planned Program

DSRSD completed its first water system audit in 1994. DSRSD's water distribution system is fairly new and the 1994 audit reflected this fact. Water losses associated with pipeline leaks accounted for only 0.5 percent of total water use in the system. Since 1994, annual water losses due to leaks have, on average, been less than one percent of the annual water use.

DSRSD has a Water Loss Program in place, which includes a residential water meter replacement program and a leak detection program. DSRSD engineering staff calculates and tracks unaccounted-for water on a monthly basis by comparing total potable water purchases with potable water sales.

In addition, DSRSD began an on-going Water Audit Program in 2005. The program uses the standard water audit technique developed by the American Water Works Association (AWWA) to identify real losses and apparent losses in DSRSD's potable water system. The program also calculates percent water loss vs. system input. As shown below, water loss vs. system input has steadily declined since 2005 due to an emphasis on system maintenance and accurate record keeping.⁸⁵

- 2005: 1.8 percent
- 2006: 1.7 percent
- 2007: 4.0 percent
- 2008: 4.6 percent
- 2009: 4.8 percent
- 2010: 6.6 percent

These amounts of water losses are down significantly from previous years (10.6 percent in 2004) and are relatively low when compared to other water utilities.

85. Source: DSRSD Standard Water Audit spreadsheet provided by Stan Kolodzie.

Effectiveness Evaluation

DSRSD tracks the effectiveness of this program based on reductions in water loss throughout the system.

Implementation Schedule

- Water system audits (DSRSD): on-going
- Accounting of water losses vs. system input (Water Loss Program) (DSRSD): on-going
- Leak detection and repair programs (DSRSD): on-going by Field Operations

BMP 1.3 Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

(formerly BMP/DMM 4: Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections)

Current/Planned Program

All connections within DSRSD are metered and all customer sectors are billed based on metered consumption. For residential customers, DSRSD currently uses an inclining block rate structure with three tiers up to and greater than 34 units (3,400 cubic feet or 25,432 gallons) of consumption. Commercial customers (including institutional and master metered multi-family customers) have seasonal metered rates. Potable water irrigation customers have a special metered rate. When DSRSD declares a water shortage, potable water rates increase for all customers in stages to encourage water conservation and recover revenue needed to operate the water system with declining water sales. For additional information on DSRSD's water rate structure, see "Retail Conservation Pricing," below.

In 2004, DSRSD completed a residential water meter replacement program. It identified 5,600 residential and 162 commercial meters that needed to be replaced due to excessive wear. As of August 2004, all designated meters had been replaced.

Since the 2004 program, replacement of the remaining residential and commercial meters is an on-going process as determined by the cumulative throughput through the meter and/or the age of the meter. DSRSD replaces approximately 600 meters per year due to meter failure or meters reaching their operational limit.

Effectiveness Evaluation

DSRSD monitors the effectiveness of its meter replacement program by tracking the number of meters replaced per year.

Implementation Schedule

- Billing at commodity rates (DSRSD): on-going (see “Retail Conservation Pricing,” below)
- Meter replacement: on-going as determined by meter throughput and age

BMP 1.4 Retail Conservation Pricing

(formerly BMP/DMM 11: Conservation Pricing)

Current/Planned Program

DSRSD has practiced conservation pricing since 1992. As discussed above, all customer sectors are billed for water service based on actual metered consumption. DSRSD’s current water rates are summarized in Table 6-4. As shown, the consumption charges increase with the declared water shortage stage. On July 1, 2009, the DSRSD Board of Directors declared a Stage 1 Water Shortage with a 20 percent voluntary water use reduction. Normal rates are in effect when no water shortage has been declared.

Table 6-4. DSRSD 2011 Water Rates¹					
	Normal	DSRSD Board of Directors Declared Water Shortage Stage ²			
		Stage 1	Stage 2	Stage 3	Stage 4
Table A. Consumption Charges for All Customers (these rates do not change during a declared water shortage)					
Zone 7 Cost of Water (applies to all potable water customers), \$/unit ³			\$2.16		
Recycled Water, \$/unit			\$2.96		
Power Charge (applies only to service locations above 389 feet in elevation), \$/unit			\$0.25		
Table B. Consumption Charges for Potable Water Customers					
Residential Customers					
Tier 1 (1-20 units), \$/unit	\$0.78	\$0.84	\$1.09	\$1.56	\$2.18
Tier 2 (21-34 units), \$/unit	\$0.95	\$1.19	\$1.67	\$2.14	\$3.13
Tier 3 (over 34 units), \$/unit	\$1.08	\$1.41	\$2.33	\$3.52	\$4.87
Commercial Customers (includes Industrial, Multi-Family and Institutional)					
Winter (Nov-Apr)—all units, \$/unit	\$0.91	\$0.98	\$1.27	\$1.82	\$2.55
Summer (May-Oct)—all units, \$/unit	\$1.09	\$1.37	\$1.94	\$2.78	\$4.10
Potable Irrigation Customers—all units, \$/unit	\$1.13	\$1.45	\$1.98	\$3.54	\$4.90
Table C. Fixed Charges for All Customers					
Bimonthly charge based on size of meter (these rates do not change during a declared water shortage)	Size of Meter (inches)	Bimonthly Service Charge		Bimonthly Infrastructure Charge	
	5/8"	\$16.18		\$18.00	
	3/4"	\$24.27		\$27.00	
	1"	\$40.45		\$45.00	
	1-1/2"	\$80.90		\$90.00	
	2"	\$137.53		\$144.00	
	3"	\$283.16		\$300.00	
	4"	\$809.03		\$300.00	
	6"	\$1,618.05		\$1,878.00	
	8"	\$2,831.64		\$3,286.00	
10"	\$4,449.64		\$5,164.00		
¹ "Water Rates & Charges" on the DSRSD web site, http://www.dsrdsd.com/your_water_services/water_ratescharges.html . Rates shown are 2011 rates that took effect on January 1, 2011. Total water bill is sum of applicable charges in Table A + Table B + Table C. ² See Section 5 for additional information on DSRSD's Water Shortage Contingency Plan. ³ 1 unit of water = 100 cubic feet = 748 gallons.					

Table 6-5. DSRSD 2011 Wastewater Rates¹	
Type of Customer	Wastewater Rate Per Period or Unit (as shown)
Single-family Dwellings	Billed Annually with Property Taxes
Single-family home or townhouse	\$328.80/year
Condominium	\$225.06/year
Duplex	\$657.60/year
Single-family home with second dwelling unit	\$515.04/year
<i>Multi-Unit Dwellings</i>	\$31.04/bimonthly per dwelling unit (Billed bimonthly with water service charges)
<i>Businesses and Institutions</i>	Rate Per Unit of Water Used ² (Billed bimonthly with water service charges)
Bakery	\$5.28
Commercial Laundry	3.07
Restaurant (full service)	4.23
Restaurant (fast food)	3.71
Auto Steam Cleaning	6.67
Grocery with Garbage Disposal	5.34
Mortuary	5.61
Commercial All Others	2.75
School (submetered)	2.42
School (not submetered)	1.87
Institutional All Others	2.87
<i>Industrial</i>	Billed based on volume (per million gallon), biological oxygen demand (BOD)(per million pound), suspended solids (per million pound) and per connection (each)
¹ “Wastewater Rates & Charges” on the DSRSD web site, http://www.dsrdsd.com/your_water_services/wastewater_ratescharges.html . Rates shown are 2011 rates effective January 1, 2011. Rates to increase on July 1, 2011. ² 1 unit of water = 100 cubic feet = 748 gallons	

Wastewater service for single-family residences is based on an annual rate (billed annually with property taxes) and multi-unit dwellings are based on a bimonthly rate per dwelling unit (billed bimonthly with water service charges). Commercial (businesses) and institutional customers are billed for wastewater service on a uniform rate structure based on business type and units of water usage, which further promotes water conservation by these customers (see Table 6-5).

Effectiveness Evaluation

DSRSD evaluates the effectiveness of conservation rates by tracking changes in unit water use resulting from rate increases.

Implementation Schedule

- Conservation pricing (DSRSD): on-going

BMP 2.1 Public Information Programs

(formerly BMP/DMM 7: Public Information Programs)

Current/Planned Program

In promoting water conservation, DSRSD seeks to foster sustainable changes in behavior, not just temporary responses to drought. An annual outreach plan identifies key messages pertaining to wise water use and the value of recycled water in conserving potable water. The plan specifies tactics designed to reach various target audiences.



Free conservation devices.

RESIDENTIAL CUSTOMERS

Bimonthly bills provide historical data on consumption and explain volume-based pricing tiers and water shortage rates. Bill inserts and a customer newsletter often feature water conservation topics and encourage customers to visit DSRSD's website for information on current conditions and progress toward conservation goals (the latter is updated the first of each month). The web site also features information about rebates, free water-saving devices, tips for efficient water use, instructions for optimizing irrigation, and an interactive landscape planning tool, *Water-Wise Gardening in the Tri-Valley*.

DSRSD displays conservation information and gives coupons for free water-saving devices at community events such as the St. Patrick's Day parade. It conducts an annual workshop on drought-tolerant gardening or another event with a water conservation theme during Dublin Pride Week. In 2010, it updated signage and produced a brochure and web page about new landscaping in its dry climate demonstration garden (open to the public). Depending on results of a Smart Irrigation Controller pilot program (described further under "Landscape Water Survey," below), DSRSD plans to publicize success stories and an expanded program. Magnetic signs on meter readers' trucks and other DSRSD vehicles reinforce conservation messages. In 2012 and 2014, DSRSD will survey customers to identify areas of concern and measure satisfaction with its services if funding is available. DSRSD will use this public input to shape its future water conservation messages.

COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL CUSTOMERS

DSRSD distributes restroom mirror stickers ("conserve, report leaks") to commercial and institutional customers and table signs ("water served on request") to restaurants. In 2010, 2,172 water conservation bathroom mirror stickers were distributed to businesses throughout the service area and 1,219 water conservation table tents were distributed to restaurants in the service area. DSRSD is providing incentives to schools and other

selected institutional customers to retrofit urinals to use Ecoblue Cube (see further discussion under BMP 4 Commercial, Industrial, and Institutional (CII)).

MEDIA AND OPINION LEADERS

DSRSD spreads key conservation messages through contact with the media (news releases, proactive contact with reporters) and opinion leaders (speaker's bureau for business and community groups and homeowners' associations). DSRSD donates subscriptions of *National Geographic Water for Tomorrow* magazine to local public and school libraries and medical office waiting rooms. City and school libraries also received the video series *California's Water*. Staff meets monthly with DSRSD's wholesale supplier and neighboring retailers to coordinate regional outreach. Staff also serves on committees for industry groups including CUWCC and Association of California Water Agencies (ACWA). DSRSD offers public tours of the wastewater treatment plant where recycled water is produced.

The number and type of public information events conducted each year from 2005 to 2010 by DSRSD are included in DSRSD's CUWCC reports (see Appendix T).

Effectiveness Evaluation

These programs are an essential component of developing water conservation awareness; however, they are qualitative and cannot be defined in quantitative terms.

Implementation Schedule

RESIDENTIAL CUSTOMERS:

- Educate via water bill consumption data, bill inserts, customer newsletter: on-going
- Continually update conservation section on web site, including "odometer" that tracks potable water savings monthly: on-going
- Distribute coupons for free-water saving devices at public events: on-going
- Conduct annual workshop on drought-tolerant gardening or other water-conservation themed event: on-going
- Updated brochure and signage for existing demonstration garden: 2010
- Publicize smart irrigation controller incentives: 2011 (if pilot program is expanded)
- Change magnetic vehicle signs (with conservation messages) quarterly: ongoing

COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL CUSTOMERS:

- Distribute restroom mirror stickers, restaurant table signs: on-going
- Promote Ecoblue Cube urinal retrofits: Pilot program started in 2010
- Disseminate landscape audit success stories: 2011 or when customers implement recommendations

MEDIA, OPINION LEADERS:

- Contact media: on-going
- Coordinate regional programs with wholesaler and neighboring retailers: on-going
- Participate in industry groups: on-going
- Offer recycled water plant tours: as requested

BMP 2.2 School Education Programs

(formerly BMP/DMM 8: School Education Programs)

Current/Planned Program

DSRSD made significant investments in school education programs from 2001 to 2009, creating a network of local educators who are aware of California's scarce water resources and reaching 9,411 students over six years of classroom presentations.

Due to budget and staff reductions, DSRSD stopped offering classroom presentations in the fall of 2009. It intends to reinstate the program as soon as funding is available, and it is maintaining contact with teachers. DSRSD has posted the K-5 lesson plans on its website. In 2010 and 2011, DSRSD provided water conservation educational materials and equipment to local teachers who used DSRSD lesson plans in their classes. In 2011,



DSRSD educator Mary Beth Hodges teaches fifth graders "Every Drop Counts."



DSRSD Engineer Jackie Yee volunteers at a Filter Challenge workshop at the Expanding Your Horizons Fair.

DSRSD distributed 1,283 water conservation activity booklets to all second grade classrooms in its service area.

Zone 7 also has a Water Science Schools Program. Until the DSRSD classroom program is reinstated, Zone 7 is serving requests from teachers in a portion of the DSRSD service area. Zone 7's programs were developed by credentialed teachers and are tailored to California content standards for each grade level. They include:

- Kindergarten: Water Maters (water cycle)
- First Grade: Conservation Concepts (conservation)
- Second Grade: Title: Creek and Stream Environments (prevent pollution)
- Third Grade: What's Water Got to Do with It? (water's impact on local settlement)
- Fourth Grade: California and the Race for Liquid Gold (state water history and infrastructure)
- Fifth Grade: Life as a Water Molecule
- Fifth Grade: You're Going to Drink That? (drinking water treatment and safety)
- Sixth Grade: The Wonder Down Under (local groundwater resources)
- Sixth – Eighth Grades: You're Going to Drink That? (drinking water treatment and safety)

DSRSD also continues to promote wise water use through the following special events:

- Conducts a water workshop at the Expanding Your Horizons math and science conference for young women
- Discusses water saving tips at elementary school science fairs upon request
- Offers awards at the Tri-Valley Science & Engineering Fair for projects related to water, recycled water, and wastewater

DSRSD's CUWCC reports quantify the number of teacher workshops, classroom presentations and the number of students reached each year by its school education programs for 2005 to 2010 (see Appendix T).

Effectiveness Evaluation

These education programs are an essential component of developing water conservation awareness; however, they are qualitative and cannot be defined in quantitative terms.

Implementation Schedule

- Zone 7 classroom presentations: on-going
- DSRSD classroom presentations: to be reinstated for the 2012-2013 school year if funding is available
- DSRSD participation in local educational events: on-going

6.2 Programmatic BMPs

The Programmatic BMPs are summarized in Table 6-6. Again, please note that the BMP numbering below uses the specific numbers designated for the various BMPs by the CUWCC. They are not section numbers.

Table 6-6. Summary of Programmatic BMPs		
Programmatic BMP Name	Programmatic BMP Program	Former BMP/DMM Number
Residential Programs	BMP 3.1 Residential Assistance Program	formerly BMPs 1 and 2
	BMP 3.2 Landscape Water Survey	formerly BMP 1
	BMP 3.3 High-efficiency clothes washers (HECWs)	formerly BMP 6
	BMP 3.4 WaterSense Specification (WSS) toilets	formerly BMP 14
	BMP 3.5 WaterSense Specifications for residential development	
Commercial, Industrial, and Institutional Programs	BMP 4 Commercial, Industrial, and Institutional (CII)	formerly BMP 9
Landscape Programs	BMP 5 Landscape	formerly BMP 5

DSRSD's activities related to these Programmatic BMPs are described below.

BMP 3.1 Residential Assistance Program

(formerly BMP/DMM 1: Water Survey Programs for Single-Family and Multi-Family Residential Customers and BMP/DMM 2: Residential Plumbing Retrofit)

Current/Planned Program

WATER SURVEYS AND AUDITS

DSRSD's water survey program typically involves residential interior and exterior water use reviews whereby staff assist homeowners in identifying potential leaks and areas for water savings. Interior fixtures are checked and tested for leaks, and irrigation systems

are evaluated. Residents are generally provided with recommendations for improvements, plumbing retrofit kits, and water conservation literature. Such programs can be very labor intensive as they require time to set up appointments with residents, as well as the actual survey time and follow-up time.

DSRSD has offered water audits to customers from the time of its first water deliveries. In 2009-2010, DSRSD staff sent letters offering water conservation surveys to the top 100 residential single-family customers that were consuming the most water. In addition, water conservation staff provides audits to customers upon request. In 2010, DSRSD staff

completed 12 residential and landscape surveys. In addition, Customer Service, Field Service, and Field Operations employees provided customers with leak detection assistance and water efficiency suggestions upon request. The number of single-family and multi-family water surveys offered and completed by DSRSD from 2005 to 2010 is provided in its CUWCC reports (see Appendix T).

RESIDENTIAL PLUMBING RETROFIT

As a result of Assembly Bill 2325, which DSRSD supported during its passage, all new homes constructed as of January 1992 require the installation of ultra low flush toilets (1.6 gallons per flush). DSRSD has a two-fold interest in water conservation since it is both a water purveyor and an owner and operator of a wastewater treatment plant. In 1981, DSRSD commissioned Brown and Caldwell to complete a water conservation plan. A pilot water conservation program completed in 1986 showed that water use could be reduced by about 50 gallons per day by retrofitting pre-1979 homes with low-flush toilets and water efficient showerheads.

In 2007, DSRSD started a low-flow device give-away program for residential customers. Coupons sent via water bills offered low-flow fixtures such as kitchen and bathroom faucet aerators, low-flow showerheads, and garden hose shut-off nozzles. Customers could redeem the coupons at the DSRSD administrative office, as well as dye tablets to test their toilets for leaks, toilet flappers to repair toilet leaks, and meter bags to measure the flow of faucets and showerheads. The number of low-flow devices distributed by DSRSD between 2007 and 2010 are indicated on Table 6-7.

Table 6-7. DSRSD Distribution of Low-Flow Devices							
Year	Kitchen Faucet Aerators	Bathroom Faucet Aerators	Low-Flow Shower-heads	Toilet Flappers	Dye Tablets	Garden Hose Nozzles	Flow Meter Bags
2007	506	1,460	1,037	1,282	1,190	478	N/A
2008	108	150	183	197	154	143	87
2009	81	228	154	190	195	95	88
2010	107	248	194	217	206	105	103
Total	802	2,086	1,568	1,886	1,745	821	278

DSRSD has continued to offer free low-flow devices to customers through public outreach events, classroom presentations, grocery store shopping carts and receipts, and customer newsletters.

In the coming years, DSRSD will need to comply with the recently passed Senate Bill (SB) 407 legislation requiring replacement of non-water conserving plumbing fixtures. Key compliance dates for SB 407 are as follows:

- On or after January 1, 2014, for all building alterations or improvements to residential (single- and multi-family) and commercial real property, water-conserving plumbing fixtures must replace other noncompliant plumbing fixtures as a condition for issuing a certificate of final completion and occupancy or final permit approval by the local building department.
- On or before January 1, 2017, all noncompliant plumbing fixtures in any single-family residential real property must be replaced by the property owner with water-conserving plumbing fixtures.
- On or after January 1, 2017, a seller or transferor of residential (single- and multi-family) or commercial real property must disclose to a purchaser or transferee specified requirements for replacing plumbing fixtures, and indicate whether the property includes noncompliant plumbing.
- On or before January 1, 2019, all noncompliant plumbing fixtures in multi-family residential and commercial real property must be replaced with water-conserving plumbing fixtures.

Effectiveness Evaluation

The effectiveness of these programs will be measured by monitoring the number of completed survey requests and the number of new residential, commercial, institutional and industrial establishments constructed or remodeled with efficient equipment. In addition, the number of water conservation kits distributed will be tracked.

Implementation Schedule

- Water survey programs: on-going, as requested by the customer; during fiscal year 2009/2010, residential surveys were offered to the top 100 water consumers among single-family residential customers
- Requirements for low-flow fixtures: on-going
- Low-flow device give-away program: on-going
- Compliance with SB 407 legislation: as required

BMP 3.2 Landscape Water Survey

(formerly BMP/DMM 1)

Current/Planned Program

DSRSD started a pilot smart irrigation controller program in March 2009. Twenty-five Smartline Weathermatic Irrigation Controllers and Weather Stations were purchased to be installed in selected single-family homes representing high and medium water users. In 2010, 14 smart irrigation controllers were installed. DSRSD hired a professional landscape company to install the controllers, audit the customer's irrigation system at the time of installation, and provide guidance and assistance to the customer. Follow-up visits will be conducted to ensure the controllers are functioning and being used properly. Monthly meter reads will be collected to determine the effectiveness of these controllers in reducing water consumption. In fiscal year 2010/11, DSRSD budgeted an additional \$10,000 to expand this pilot program.



A landscaping contractor and DSRSD Clean Water Programs Specialist Stefanie Olson perform a water audit at a residence before installing a Smart Controller system.

Effectiveness Evaluation

The effectiveness of this program will be measured by monitoring the number of Irrigation Controllers and Weather Stations installed and the actual water savings achieved for these customer accounts.

Implementation Schedule

- Pilot Smart Irrigation Controller Program: on-going
- Irrigation Guidelines (DSRSD): on-going on “Residential Irrigation” web page: <http://www.dsrds.com/waterconservation/irrigation.html>

BMP 3.3 High-Efficiency Clothes Washers (HECWs)

(formerly BMP/DMM 6: High-Efficiency Washing Machine Rebate Programs)

Current/Planned Programs

ONE-STOP REBATE PROGRAM

DSRSD participates in the statewide One-Stop Rebate Program, which is coordinated and implemented through CUWCC. This program was co-funded through a grant from Proposition 50 and by participating water suppliers throughout California. The program assists DSRSD in complying with Programmatic BMP 3 (Residential) and BMP 4 (Commercial, Industrial, and Institutional). Rebates offered are as follows:

- High-efficiency clothes washers (HECW) - residential: \$150
- HECW – commercial: \$400
- ULFT/HET – residential: \$100 (ULFT rebates no longer available as of November 2009, only HET)
- High-efficiency urinals – commercial: \$300
- ULFT/HET commercial: \$300 (ULFT rebates no longer available as of November 2009, only HET)
- HET commercial: \$200
- Cooling tower conductivity controller: \$900 - \$1200

DSRSD pays 50 percent of the rebate amount and a processing fee of \$33.39 per rebate issued. The cooling tower retrofit rebate is the only exception, where DSRSD paid a \$720.50 processing fee and meter/installation fee of \$450. In January 2007, DSRSD paid \$9,175 to participate in the statewide program.

In May 2007, DSRSD received correspondence from CUWCC stating that there was \$274,150 of additional funding available to agencies if they would like to offer more rebates to their customers. DSRSD decided to take advantage of this opportunity and paid an additional \$10,050 to increase the number of rebates offered to customers. DSRSD had to pay 100 percent of the rebate amount upfront and then at the end of the program, or within 60 days of distribution of all the rebates, 50 percent of the \$10,050 will be paid back to DSRSD.

The One-Stop Rebate Program was suspended January 2009 due to funding shortfalls and reinstated in October 2009. The number of rebates that were processed and issued as of the end of December 2010 is summarized in Table 6-8.

Type of Rebates	2007	2008	2009 ¹	2010	Total Fixtures
HECW – Residential	20	29	8	30	87
ULFT – Residential	6	5	1	n/a	12
HET – Residential	3	4	0	24	31
HECW – Commercial	0	0	0	0	0
ULFT – Commercial	0	0	0	0	0
HET – Commercial	0	0	0	n/a	0
HEU – Commercial	0	15	0	0	15
Total	29	53	9	54	145

¹The program was discontinued January 2009 due to funding shortfalls and reinstated in October 2009.

HIGH-EFFICIENCY CLOTHES WASHERS REBATE PROGRAMS

High-efficiency washing machines use about 50 percent less water than conventional machines, using only 20 to 30 gallons of water per load, compared to 40 to 45 gallons for conventional top-loading washers. The estimated annual savings for a typical household is about 5,100 gallons per year.

Since 1998, Zone 7 has had a Residential Clothes Washer Rebate Program for customers in its service area. The rebate is for the purchase of high-efficiency EnergyStar[®] labeled clothes washing machines and is for up to \$125 on qualifying high-efficiency washers for water savings and \$75 for energy savings. Between 1998 and December 2007, the program was administered for Zone 7 by the Electric & Gas Industries Association (EGIA). From January 2008 to present, the program is administered by Zone 7 and Pacific Gas & Electric Company (PG&E).

DSRSD also participates in the One-Stop Rebate Program with the CUWCC, which offers up to \$150 on qualifying high-efficiency washers. In January 2009, the One-Stop Rebate Program was suspended due to funding shortfalls and reinstated in October 2009.

The number of high-efficiency washer rebates processed from 2005 to 2010 is shown in Table 6-9.

Table 6-9. Summary of High-Efficiency Washer Rebates¹							
Service Area	2005	2006	2007	2008	2009	2010	Total
Total (includes rebates in Dublin and San Ramon)	551	554	454	697	939	896	4,091

¹Source: Robyn Navarra, Zone 7 Water Conservation Coordinator. Includes Tier 2 and Tier 3 rebates.

Effectiveness Evaluation

The effectiveness of these rebate programs is evaluated by tracking the number of requested and reimbursed rebates.

Implementation Schedule

- HECW Rebate Program (Zone 7 and PG&E): on-going
- HECW (One-Stop Rebate Program) (DSRSD): on-going

BMP 3.4 WaterSense Specification (WSS) Toilets

(formerly BMP/DMM14)

Current/Planned Program

In an attempt to reduce water use, Zone 7 started a 10-year Ultra-Low-Flow Toilet (ULFT) Rebate Program in conjunction with the Tri-Valley Water Retailers (DSRSD, City of Pleasanton, City of Livermore, and California Water Service Company-Livermore District) in 1994. The program offered a \$75 rebate per toilet to all customers that replaced old toilets with new low-flow devices. Rebates were offered only to residential customers. The toilet rebate program was quite successful in DSRSD's service area. From July 1996 to September 30, 2008, 1,528 ULFT toilet rebates were issued by DSRSD. The ULFT rebate program ended June 30, 2008; however, ULFT toilet rebates were still paid out 90 days after the program end date providing the ULFT toilet was purchased prior to June 30, 2008.

On July 1, 2008, Zone 7, in conjunction with the Tri-Valley Water Retailers, changed the ULFT toilet rebate program to a High Efficiency Toilet (HET) rebate program. DSRSD residential customers that purchase qualifying HETs can apply for a \$150 rebate per toilet. Since the start of the program, 128 HET toilet rebates have been issued by DSRSD.

As shown in Table 6-10, DSRSD has issued over 1,500 toilet rebates since 1996. These rebates have totaled \$121,319 and have resulted in an estimated water savings of at least 85 acre-feet.

Table 6-10. DSRSD Residential Ultra-Low Flow Toilet & HET Rebates Summary¹	
Year	Number of Ultra-Low Flow Toilet Rebates Issued by DSRSD
1996 (July thru December)	60
1997	513
1998	145
1999	119
2000	118
2001	95
2002	80
2003	139
2004	46
2005	38
2006	41
2007	44
2008	90
2009 (HET)	85
2010 (HET)	105
Total	1,718
¹ Source: Robyn Navarra, Zone 7, Water Conservation Coordinator	

The One-Stop Rebate Program also provides HET rebates to residential customers and HET and HE urinal rebates to commercial customers. This program will remain available to DSRSD customers as long as funding is available.

Effectiveness Evaluation

The effectiveness of these rebate programs is evaluated by tracking the number of requested and reimbursed rebates.

Implementation Schedule

- High Efficiency Toilet (HET) Rebate Program (Zone 7/DSRSD): on-going
- One-Stop Rebate Program (CUWCC/DSRSD): on-going

BMP 3.5 WaterSense Specification for Residential Development

Current/Planned Program

In April 2009, the City of Dublin adopted a Green Building Ordinance⁸⁶ that encourages the conservation of natural resources for new buildings and landscapes in accordance with the GreenPoint rating system⁸⁷ or the LEED for Homes Green Building Rating System.⁸⁸ Ordinance No. 05-09 is included in the City of Dublin's Municipal Code Chapter 7.94 and is included in Appendix U.

Effectiveness Evaluation

The effectiveness of this program will be measured by recording the number of new buildings and landscapes using water-efficient fixtures and appliances in future years.

Implementation Schedule

- Green Building Ordinance: on-going (City of Dublin Municipal Code Chapter 7.94)

86. City of Dublin Ordinance No. 05-09, Green Building, adopted by the Dublin City Council on April 21, 2009. Provisions included in City of Dublin Municipal Code Chapter 7.94.

87. The GreenPoint Rating System is established by Build It Green, a nonprofit organization that published the New Home Construction Green Building Guidelines.

88. The LEED for Homes Green Building Rating System is the Leadership in Energy and Environmental Design Home Green Building Rating System as approved by the U.S. Green Building Council.

BMP 4 Commercial, Industrial, and Institutional (CII)

(formerly BMP/DMM 9: Conservation Programs for Commercial, Industrial, and Institutional Accounts)

Current/Planned Programs

The One-Stop Rebate Program described above provides financial assistance to CII customers who are interested in replacing their high water use toilets and urinals. In 2008, Hacienda Crossings' Regal Cinemas used the One-Stop Rebate Program to replace 15 high water use urinals with HE urinals.

In 2009, DSRSD performed water conservation surveys for 21 commercial businesses located in the Ulferts Shopping Center in Dublin. Staff reviewed the type of water fixtures inside the facility and the customer's water use practices, looked for leaks, and provided the customer with water efficiency suggestions following the survey.

In 2010, DSRSD initiated a pilot program to reduce water use by using the Ecoblue Cube System (solid blue cubes that sit in the urinal and a spray cleaner) in 66 urinals located at the following places: 12 DSRSD urinals (located at its administrative office, wastewater treatment plant and field operations office); five urinals at the Dublin Unified School District (DUSD) Administrative Office and 10 urinals at the Wells Middle School; and, 40 urinals at the Valley Christian Center.

The City of Dublin reviews proposed water uses for commercial and industrial water service and makes recommendations for improved water use efficiency. As described above, the City of Dublin also recently adopted green building standards to encourage conservation of natural resources.

DSRSD provides potable water, recycled water, and wastewater collection, treatment and disposal, but does not have direct land use planning jurisdiction. Therefore, to promote water use efficiency, DSRSD coordinates closely with the City of Dublin on planning and development issues. DSRSD works with developers and their architects directly during plan review to recommend water efficient landscaping. Furthermore, DSRSD staff regularly attends Project Review Committee meetings, Planning Commission Meetings, and Council Meetings on all projects with significance to water usage. DSRSD's comments and requirements are routinely sought by the cities in order to adequately and accurately condition projects. DSRSD has assisted with the adoption of the City of Dublin's Water Efficient Landscaping Regulations Ordinance, and has reviewed Landscape Concept Statements for water efficient compliance.

Also, as described above, the recently passed SB 407 legislation related to replacement of non-water-conserving plumbing fixtures applies to commercial properties and will be implemented as required.

Effectiveness Evaluation

DSRSD will evaluate the effectiveness of these programs by tracking the number of CII surveys requested and conducted and the number of reimbursed rebates for CII customers.

Implementation Schedule

- CII water conservation audits: on-going
- School water use audits (DSRSD, Zone 7 and DUSD): on-going
- Requirements for low-flow fixtures (Plumbing Code): on-going
- Requirements for water efficient landscapes (City of Dublin): on-going
- Requirements for use of recycled water (DSRSD): on-going
- Green Building Practices (City of Dublin): on-going
- Specific restrictions during water shortages (DSRSD): implemented as needed
- Participation in land use planning and development activities (DSRSD and City of Dublin): on-going
- Compliance with SB 407 legislation: as required
- One-Stop Rebate Program: on-going

BMP 5 Landscape

(formerly BMP/DMM 5: Large Landscape Conservation Programs and Incentives)

Current/Planned Programs

LANDSCAPE SURVEYS

As of the end of 2008, DSRSD had 634 dedicated irrigation meter accounts. DSRSD assists these customers by offering to survey the efficiency of existing or new irrigation systems. DSRSD performed six large landscape surveys in 2009 and two more in 2010. The number of landscape surveys offered and completed from 2005 to 2010 is included in DSRSD's CUWCC reports (see Appendix T).

LARGE LANDSCAPE AUDIT PROGRAM

In September 2009, Zone 7 and the Tri-Valley Water Retailers worked together to establish a Large Landscape Audit Program. Zone 7 is funding the program and the retailers act as liaisons between their customers and Zone 7. The program provides audits and irrigation enhancement advice to selected large landscape irrigation customers. Zone 7 hired a landscape auditor contract company, Spot Water Management, to conduct the audits and provide advice to the selected customers. The landscape auditor provides a

report which provides a true evaluation of the customer's existing irrigation system and a water budget. The report also includes recommendations to improve irrigation efficiency. The program provides funding in the form of incentives to replace old or defective irrigation hardware.

RECYCLED WATER

In April 1998, DSRSD adopted Ordinance No. 280⁸⁹ which established a Recycled Water Use Zone within DSRSD's service area. Ordinance No. 280 was repealed and replaced with Ordinance No. 301⁹⁰ on April 6, 2004. Ordinance No. 301 formally established the rules and regulations governing the use of recycled water by DSRSD customers. This ordinance requires, except for small isolated areas, all new irrigation systems serving parks, streetscapes, commercial landscaping and common area landscaping for multi-family developments to use recycled water. A copy of Ordinance No. 301 is provided in Appendix K. When DSRSD recodified its code in November 2010, it added Section 3.20.110, Duty to connect—Recycled water (included in Appendix H), which requires that new development in DSRSD's water service area use recycled water for appropriate irrigation.



Emerald Glen Park, Dublin

As a condition of receiving potable water service from DSRSD, all new development areas must include dual distribution piping for recycled water deliveries where feasible. The policy also includes provisions to convert existing potable water irrigation accounts to recycled water where economically feasible.

DSRSD's recycled water customers are required to obtain a Recycled Water Use License and to submit quarterly self-monitoring reports and log forms to DSRSD documenting inspections of their irrigation systems for system breaks, overspray, and other issues. DSRSD staff also inspects licensed recycled water use sites on a regular basis. As of December 2010, there were 188 licensed sites covering about 600 acres of landscaped area throughout Dublin and Dougherty Valley. Total recycled water use in 2010 was about 1,728 acre-feet, which saved a comparable amount of potable water.

89. District Ordinance No. 280, Establishing a Recycled Water Use Zone within the District, adopted by the District Board of Directors in April 1998. Repealed by District Ordinance No. 301 in April 2004.

90. District Ordinance No. 301, Ordinance Formally Establishing Rules and Regulations Governing the Use of Recycled Water with the Dublin San Ramon Services District and Repealing Ordinance No. 280, adopted by the District Board of Directors on April 6, 2004.

WATER-EFFICIENT LANDSCAPE REGULATIONS

In December 1991, the City of Dublin adopted Ordinance No. 18-92 pertaining to water-efficient landscaping regulations.⁹¹ The purpose of the ordinance was two-fold: (1) to reduce potable water consumption for irrigation without a decline in the physical or visual quality of urban landscaping; and (2) to establish a sufficient, but flexible, structure for designing, installing, and maintaining water efficient landscapes in local projects. The requirements in this ordinance apply to all building or development permits issued after December 31, 1992. The requirements included in the original water-efficient landscaping regulations contained in Ordinance No. 18-92 have since been updated, and are now included in the City of Dublin's Municipal Code Chapter 8.88 (see Appendix V). The City of Dublin is currently working on revising Municipal Code Chapter 8.88 and its Water Efficient Landscape Ordinance so that they conform to AB 1881. On April 12, 2011, its Planning Commission referred an updated Chapter 8.88 Water Efficient Landscaping Regulations to the Dublin City Council for adoption.

WATER CONSERVATION DEMONSTRATION GARDEN

Since 1998, DSRSD has maintained a water conservation demonstration garden on the east side of its offices at 7051 Dublin Boulevard to provide a very graphic means of encouraging customers to replace water thirsty lawns with drought tolerant plants. The 26,000 square-foot garden utilizes a drip irrigation system and displays 27 different plants and trees. Signs and a brochure that identify the plants were updated in 2010. The City of Dublin has also installed water-efficient gardens on median strips along Dublin Boulevard to increase public awareness of water conservation.

IRRIGATION EQUIPMENT REBATE PROGRAM

In spring 2010, Zone 7 funded an irrigation equipment rebate program for qualifying large landscape customers participating in the Large Landscape Audit Program. Tri-Valley Water Retailers recommended the program to qualifying customers and participated in audits and follow-up coordination.

LARGE LANDSCAPE PROGRAM FOR SCHOOLS

Zone 7 is funding a School Large Landscape Program where each water retail agency chooses a school within its service area to participate in this program. The selected school receives an audit and Zone 7 will fund most of the recommended irrigation equipment repairs.

91. City of Dublin Ordinance No. 18-92, Water Efficient Landscaping Regulations, adopted by the Dublin City Council on December 14, 1992. Updated provisions included in City of Dublin Municipal Code Chapter 8.88.

Effectiveness Evaluation

DSRSD will evaluate the effectiveness of these programs by tracking the number of landscape surveys performed and by comparing water use at parks, schools and other large landscapes before and after the installation of efficient, ET_o-based irrigation systems.

Implementation Schedule

- Large landscape surveys (DSRSD): on-going
- Large Landscape Audit Program (Tri-Valley Water Retailers and Zone 7): on-going
- Irrigation equipment rebates (Tri-Valley Water Retailers and Zone 7): on-going
- Use of recycled water for new landscapes (DSRSD): on-going
- Water efficient landscaping regulations (City of Dublin): on-going
- Water conservation demonstration garden (DSRSD): on-going
- Large landscape program for schools (Zone 7, DSRSD, and DUSD): on-going

6.3 Estimate of Conservation Savings

DSRSD's water conservation programs have been successful in reducing potable water demand within its service area. In July 2009, due to the on-going drought conditions, and continued SWP pumping restrictions, DSRSD declared a Stage I water shortage based on its updated water conservation plan and asked all customers to voluntarily reduce water use by 20 percent. As described above, as a result of these actions, in the 12 months through December 2010, average water use per DSRSD account declined by 21.2 percent (compared to the pre-drought period from July 2006 through June 2007), equating to a total savings of 811 million gallons of potable water in the 12 month period.⁹²

As described previously, DSRSD's water conservation program conforms, to the fullest extent practical, to the CUWCC BMPs. In addition to continuing this commitment, DSRSD will annually consider providing a budget for additional water conservation activities. These activities may be on-going such as school education programs regarding water conservation or annual initiatives to promote a specific conservation practice or practices.

92. Source: DSRSD Water Conservation Tracking spreadsheet updated January 1, 2010 provided by Stan Kolodzie.

6.4 BMPs Not Implemented

As described above, DSRSD is implementing all of the BMPs. DSRSD is On Track with compliance with the CUWCC through the GPCD Compliance requirement and the implementation of all the Foundational BMP's.



Checklist by Topic

DWR Table I-2 Urban Water Management Plan Checklist, Organized By Subject

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	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.	10620(d)(2)		Section 1.2 Plan Coordination (Table 1)
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, 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. Any city or county receiving the notice may be consulted and provide comments.	10621(b)	Notice of Preparation was issued February 1, 2011	Section 1.2.3 Notification
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Section 1.3 Plan Adoption and Submittal
54	Provide supporting documentation that the urban water management 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 this urban water management plan.	10635(b)		Section 1.3 Plan Adoption and Submittal
55	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.	10642		Section 1.2.2 Public Participation
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Section 1.2.4 Availability

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Section 1.3 Plan Adoption and Submittal
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Section 1.4 Implementation
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to 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. This also includes amendments or changes.	10644(a)		Section 1.2 Plan Adoption and Submittal
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Section 1.2.4 Availability
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Section 2.2 Service Area Physical Description
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 2.2.5 Physical Description—Climate Section 2.3 Water Service Area Population
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in “Baseline Daily Per Capita Water Use.” See Section M.	Section 2.3 Water Service Area Population (Table 2-2)
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2.3 Water Service Area Population (Table 2-2)
12	Describe other demographic factors affecting the supplier’s water management planning.	10631(a)		Section 2.4 Customer Demographics

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
SYSTEM DEMANDS				
1	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.	10608.20(e)		Section 3.1 Baselines and Targets
2	<i>Wholesalers:</i> Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. <i>Retailers:</i> Conduct at least one public hearing that includes general discussion of the urban retail water supplier’s implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Section 3.1.2.2 Water Use Targets
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		Section 3.2.6 Consistency of Projected Water Demands to Interim and Urban Water Use Targets (Table 3-10)
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (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, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider ‘past’ to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Section 3.2 DSRSD Water Demands (Table 3-5)
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Section 3.3 Projected Wholesale Potable Water Demands (Table 3-11)
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Section 3.2.2 Lower Income Households (Table 3-6)
SYSTEM SUPPLIES				

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Section 4.1 Water Sources (Table 4-1)
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 4.2 Groundwater (Note: DSRSD does not itself extract groundwater as a water supply; DSRSD's groundwater supply is pumped by Zone 7)
15	Indicate whether a groundwater management plan 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.	10631(b)(1)	Zone 7 has prepared a Groundwater Management Plan for the Main Basin (copy included as appendix to Zone 7's 2010 UWMP)	Section 4.1.2.3 Local Storage
16	Describe the groundwater basin.	10631(b)(2)		Section 4.2.1 The Livermore Valley Groundwater Basin
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		Section 4.1.2.3 Local Storage
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate "not applicable" in the UWMP location column.	10631(b)(2)	Main Basin is not adjudicated	Section 4.1.3 DSRSD Groundwater Supply

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)	DWR has not identified the Main Basin as either a basin in overdraft or a basin expected to be in overdraft	Section 4.1.2.3
20	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	10631(b)(3)		Section 4.2 Groundwater (Table 4-4)
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 4.2 Groundwater (Table 4-5)
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 4.3 Water Transfer Opportunities
30	Include a detailed description of all 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, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Section 4.6 Future Water Supply Projects
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 4.4 Desalinated Water Opportunities
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 4.5.1 Coordination of Recycled Water Use in DSRSD Service Area
45	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.	10633(a)		Section 4.5.2 Wastewater Collection, Treatment and Disposal (Table 4- 7)

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
46	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.	10633(b)		Section 4.5.2 Wastewater Collection, Treatment and Disposal (Table 4-8)
47	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.	10633(c)		Section 4.5.5 Current Recycled Water Use (Table 4-9)
48	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.	10633(d)		Section 4.5.6 Projected Recycled Water Use (Table 4-11)
49	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.	10633(e)		Section 4.5.6 Actual vs. Projected Recycled Water Use (Table 4-10); Projected Recycled Water Use (Table 4-11)
50	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 acre-feet of recycled water used per year.	10633(f)		Section 4.5.7 Actions to Encourage and Optimize the Use of Recycled Water
51	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.	10633(g)		Section 4.5.7 Actions to Encourage and Optimize the Use of Recycled Water

WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING ^b

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Section 5.1.1 Resource Maximization and Import Minimization
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 5.1.2 Water Supply Reliability
23	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.	10631(c)(2)		Section 5.1.1 Resource Maximization and Import Minimization (Table 5-1)
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Section 5.3 Water Shortage Contingency and Drought Plan
36	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's water supply.	10632(b)		Section 5.3.4 Estimated Minimum Water Supply for the Next Three Years (Table 5-13)
37	Identify 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.	10632(c)		Section 5.3.3 Emergency Actions
38	Identify 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.	10632(d)		Section 5.3.1.2 Stage 2, 3 and 4 Mandatory Prohibitions and Restrictions (Table 5-10)

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
39	Specify 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.	10632(e)		Section 5.3.1.2 Stage 2, 3 and 4 Mandatory Prohibitions and Restrictions (Table 5-11)
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Section 5.3.2 Penalties and Charges (Table 5-12)
41	Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)		Section 5.3.6 Impacts of Drought Actions on Revenues and Expenditures
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)	DSRSD Resolution 34-09 provides template for future DSRSD actions	Section 5.3.1 Stages of Action Appendix R
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 5.3.5 Mechanism for Determining Actual Water Use Reductions
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 5.2 Water Quality Impacts on Reliability (Table 5-8)
53	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, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 5.1.2.4 DSRSD Water Supply Reliability (Tables 5-5, 5-6 and 5-7)

DEMAND MANAGEMENT MEASURES

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 6 Demand Management Measures
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 6 Demand Management Measures
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		Section 6.4 Estimate of Conservation Savings
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Section 6.5 BMPS Not Implemented
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29. DSRSD is a member of CUWCC.	Annual report included in Appendix T

- a. The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.
- b. The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.



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