City of Petaluma

2010 Urban Water Management Plan

June, 2011

J. Crowley Group
Water Resources Planning and Policy

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Photo Credit

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1 Plan Preparation

The Urban Water Management Act (Act) became part of the California Water Code with the passage of Assembly Bill 797 during the 1983-1984 regular session of the California Legislature. The California Water Code requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to adopt and submit an Urban Water Management Plan (UWMP) every five years to the California Department of Water Resources (DWR). The specific planning requirements are in the California Water Code Division 6, Part 2.6 Urban Water Management Planning.

1.1 Introduction

This UWMP presents the City's water supply and planning programs per the UWMP requirements. The core requirements for the UWMP include:

- A description of the water service area.
- A description of the existing and planned supply sources.
- Estimates of past, present, and projected water use.
- A description of water conservation Demand Management Measures (DMMs) already in place and planned, and other conservation measures.
- A description of the Water Shortage Contingency Plan.
- Recycled water opportunities.

The Delta Legislation passed in late 2009 resulted in a sweeping change for water management within the State. Although the majority of the legislation addresses new governance structures aimed at improving the health and management of the Delta, some elements also address demand management by water agencies throughout the State. In particular, SBX7-7 Water Conservation, requires the state to achieve a 20 percent reduction in urban per capita water use by December 31, 2020, known as 20x2020. 20x2020 requirements are now incorporated into the 2010 UWMP requirements. In summary, the UWMP must include the baseline demand analysis, water use target analysis use for 2015 and 2020, and describe the programs to achieve the target demand reductions in the UWMP.

The City of Petaluma 2010 UWMP presents each required element per the Department of Water Resources (DWR) 2010 Urban Water Management Plan Guidelines. With the passage of SBX7-7, DWR was tasked with developing the 20x2020 methodologies and guidelines to include in the 2010 UWMP. The legislation also provided an extra six months for agencies to complete the UWMP to incorporate all the new requirements. Therefore, the 2010 UWMP must be approved by an agency by June 30, 2011, and submitted to the DWR by August 1, 2011.

1.2 Coordination

The City is one of the retailers that purchase water from the Sonoma County Water Agency (SCWA). The City routinely coordinates water resource planning efforts with the other retailers and SCWA. The UWMP requires specific coordination efforts as well. The City must send a notice to all county and city governments within its service area of its intent to develop and adopt a 2010 UWMP. This notice must be sent at least 60 days prior to the public hearing to discuss the UWMP. A notice was sent to Sonoma County informing them of the City's UWMP update as presented in Appendix A.

A public review process was included in the UWMP development. The City held a public review of the UWMP to discuss the plan and receive comments from the public. The meeting was conducted at the May 16, 2011 Council Meeting. Public notice of the meeting was provided two week prior to the hearing, as included in Appendix B.

The UWMP was approved at the June 6, 2011 Council meeting. The adoption resolution is provided in Appendix C. Within 60 days of submittal to the DWR, the City will submit a copy of the UWMP to Sonoma County. Within 30 days of submittal to the DWR, the City will also submit a copy of the UWMP to California State Library, and make a copy of the UWMP available for public viewing at the City's Utility department office during normal business hours located at 202 North McDowell Boulevard, Petaluma, CA 94954.

The new SBx7-7 requirements for 20 percent demand reduction by 2020 allows for an agency to identify an individual target goal and a regional target goal. The City includes both goals in this UWMP. The City coordinated with the other SCWA retailers to develop the regional alliance and set those goals. Both sets of goals and demand projections are discussed in Section 3.

Table 1-1 summarizes the coordination for Petaluma's 2010 UWMP development process.

1.3 Implementation

The 2005 UWMP identified the City's plans for supply and demand management programs. The City planned to implement potable offset recycled water projects by expanding the tertiary recycled water system. However, due to the economic recession and a reduction in water demands, the recycled program implementation has been delayed. The current status and implementation plan is further discussed in Section 4. The Water Resources and Conservation Department (WR&C) continues to evaluate its supply options and will implement programs as necessary to effectively meet demand.

The 2005 UWMP also described the Water Utility's extensive demand management program. In 2008, WR&C updated its conservation program to include even more programs and potential water savings. The Water Utility's current conservation program is in full implementation and has contributed to a portion of the demand reductions since 2005. The full program is discussed in Section 5.

WR&C intends to implement the supply and demand management programs as presented in this UWMP. Implementation progress will be tracked through available supply accounting, specific program milestones and benchmarks, conservation program activities, and the annual California Urban Water Conservation Council annual reporting process.

Table 1-1. Coordination With Appropriate Agencies (DWR Table 1)

Agency	Participated in Developing Plan	Commented on Draft	Attended Public Hearing	Contacted for Assistance	Sent Copy of Draft	Sent Notice of Intention to Adopt	Not Involved/ No Info.
SCWA	X	X		X	X	X	
Sonoma County						X	
City of Santa Rosa	X			X			
North Marin Water District	X						
Rohnert Park	X						
Sonoma	X						
Cotati	X						
Windsor	X						
Marin Municipal Water District	X						
Valley of the Moon Water District	X						
Sonoma County Waste Management Agency		X	X				

2 System Description

WR&C serves water customers both within the City of Petaluma city boundary and outside that boundary. This section describes the Water Utility's service area, population, climate, and other elements.

2.1 Service Area Description

WR&C serves the majority of water to customers within the city boundary. Water is also served to customers outside the boundary for a variety of reasons. Some outside boundary customers were obtained when the previous private water company was replaced in 1959 with a municipal water utility service, some customer's wells failed, some customers were obtained from SCWA, as well as other specific reasons. WR&C's largest customer outside of the boundary is the United States Coast Guard training station located eight miles west of town. The water service area is shown in Figure 2-1. WR&C also provides recycled water for agricultural irrigation customers outside the City boundary. These customers are all located to the southeast, near the City's water recycling facility.

The service area climate reflects its close proximity to the Pacific Ocean. The area is subject to marine layer-type conditions throughout the year. The average summer time temperature is 60 degrees F, and the average winter temperature is 45 degrees F. The climate exhibits two distinct annual seasons, wet and dry. Most rainfall occurs in the winter months, with almost no rain in the summer months. The total average annual rainfall is 25 inches. The annual average evapotranspiration rate is approximately 44 inches.

2.2 Population

WR&C's service population is divided into two elements: customers within the City limits, and those outside of the City limit. The water utility serves smaller single family units outside the City boundary. The exception to this is that WR&C also serves the Coast Guard training facility. Historic population data within the City limit is tracked by the California Department of Finance (DOF). Annual population and average persons per household values are provided by the DOF. The DOF also provides a persons per dwelling unit value. The persons per dwelling unit value is used to estimate the population of residential connections outside the City's boundary. The Coast Guard station provided a current population of 1,350.

Future population within the City boundary is projected in the City's General Plan 2025. Population projections for customers outside the City boundary are developed with two methods. The residential customer accounts use the persons per dwelling unit value from the DOF. The Coast Guard planning documents project population to expand to 1,935. The City's General Plan projected land use and population out to 2025. Due to the current economic conditions, the UWMP shifts the endpoint of the General Plan's population projections out to 2035. Table 2-1 lists the service area population projected out to 2035.

Table 2-1. Current and Projected Service Population (DWR Table 2)

	2010	2015	2020	2025	2030	2035
Total Service Area Population	60,214	63,306	66,376	69,447	72,517	75,587

Note: 2010 population estimate based on DOF City population estimate of 57,922, outside City population of 942, and Coast Guard Station population of 1,350. Future population projections are based on General Plan projections for in-city, and customer account projections for out-of-city population.

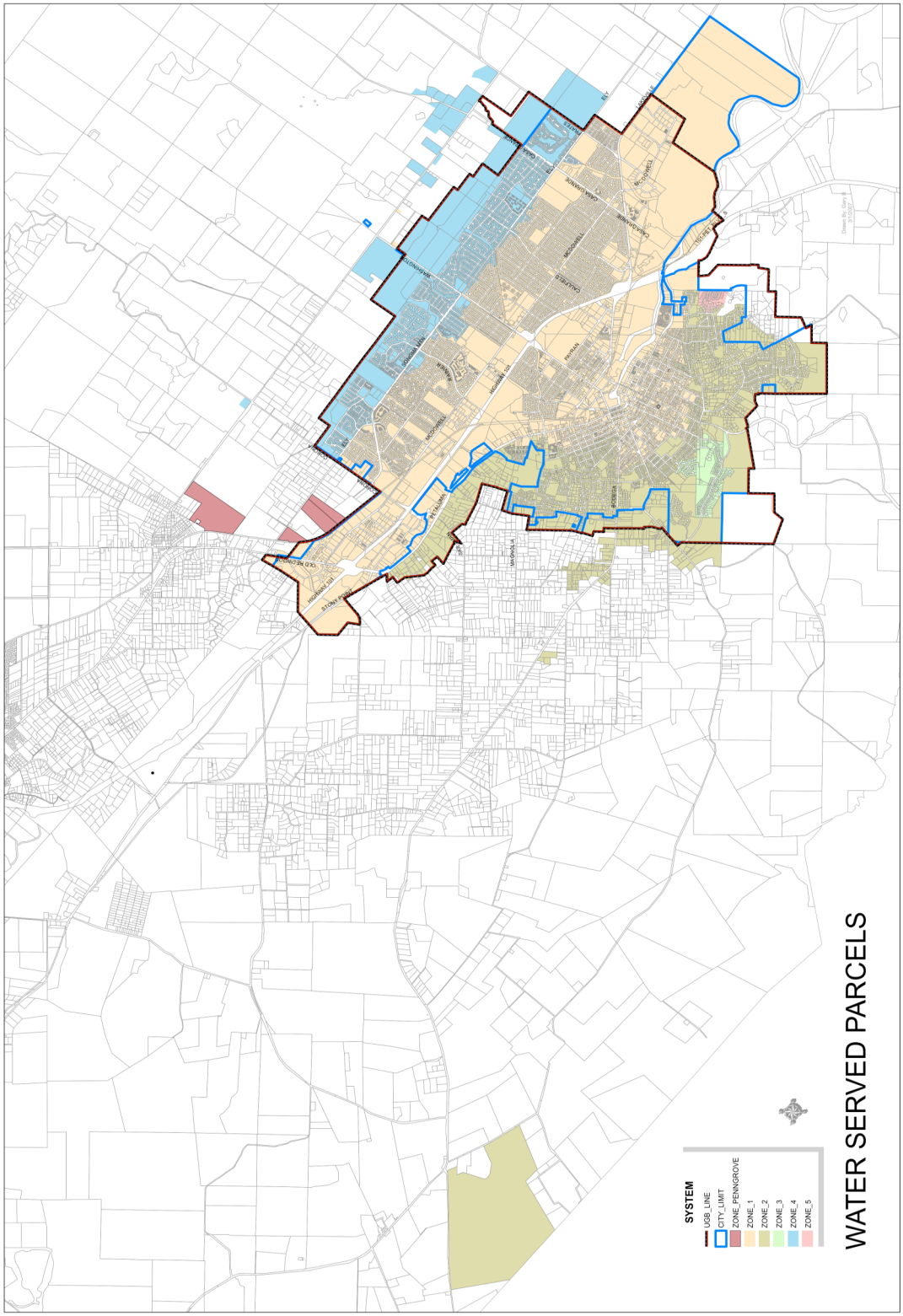

Figure 2-1. Service Area

3 Water Demands

This section presents past and projected water demands. It also presents the 20x2020 baseline and target analysis. WR&C projects that it will meet its 20x2020 requirements through continued implementation of its conservation program and potential development of local supply offsets such as recycled water.

3.1 Past Demands

2005 and 2010 historic demands are listed in Table 3-1. The utility's historic data reports the Institutional/Government accounts as part of the Commercial category. UAW (unaccounted for water) is non-revenue water, which includes known uses not billed, plus water loss. It is s also identified as system losses in other parts of this Plan, as discussed in Section 3.3.4.

Table 3-1. 2005 and 2010 Demands (DWR Table 3 and 4)

	2005 Values		2010 Values	
	No. Accts	**Volume, AFY**	**No. Accts**	**Volume, AFY**
Single Family	16,981	5,396	17,424	4,128
Multi-Family	304	914	309	865
Commercial	1,190	1,614	1,221	1,260
Industrial	25	277	22	286
Institutional/ Government	--	--	--	--
Landscape	434	1,149	447	746
Agricultural	0	0	0	0
UAW	--	696	--	712
Total:	18,934	10,047	19,421	7,998

Note: All accounts are metered.

3.2 Baseline Demand and Target

This section presents the 20x2020 baseline calculation methodology, results, and selected targets. The guidelines allow an agency to meet individual demand reduction goals and/or regional reduction goals. The City of Petaluma is selecting an individual goal for this 2010 UWMP as well as joining a regional alliance. The regional alliance has also been formed by the other SCWA Contractors, of which the City is a participating member. The City will be compliant with 20x2020 requirements. The UWMP Guidelines provide for an agency to be in compliance if it meets its individual goal, but the regional group does not meet the regional goal.

3.2.1 City of Petaluma Individual 2020 Analysis

The gallon per capita per day (gpcd) metric is calculated over a 16-year period and was used to develop the 2020 water reduction targets as outlined in the DWR 2010 UWMP Guidebook. The process involved two main components; water supplied and population served as described below. Per the UWMP Guidelines, the gpcd calculation can factor in

the use of recycled water if 2008 recycled water use exceeds 10 percent of total water use.

Water Supplied. The water supplied volume is the sum of groundwater and surface water put into the potable water distribution system. Groundwater is provided by the City's wells. Each well contains a meter that records flow entering the system. Surface water is purchased from SCWA and is metered at six aqueduct connection points. The City's tertiary recycled water program is still in the development stages. Since 2008, Rooster Run golf course and a portion of Adobe Creek golf course were the only recycled water potable offset uses.

Population. WR&C's service population is divided into two elements: customers within the City limit, and those outside of the City limit. The California Department of Finance (DOF) tracks population data within the City limit. Annual population and persons per household values are provided by the DOF. The Utility maintains and reports an annual number of residential connections. The population value is divided by the residential connections. This provides an estimate of persons per residential connection within City limits. This value is slightly higher than the DOF capita per connection value because the multi-family connections maintained by the Utility often serve multiple households. However, the DOF persons per residential connection method was used to estimate the population of customers outside the City limits based on the assumption that most of these accounts are single-family connections. The one exception to this approach is the United States Coast Guard facility, which provided population values directly to the Utility. Thus, total population served by WR&C is the sum of the DOF population for inside the City limits and the estimated population for the customers outside the City limit. The 2010 Census value is used for the in-city population in 2010.

The population served, water supplied, and resulting gpcd are summarized in Table 3-2. The 10-year running average for gpcd is indicated in the right column. The UWMP Guidelines list the methodology for 20x2020 requirements, including the baseline demand analysis. The baseline demand is the 10-year or 15-year average for gpcd ending no earlier than 2004. A 15-year average is allowed if the 2008 recycled water use is greater than 10 percent of total water use. The Utility's 2008 recycled water use does not meet this criterion, and therefore the 10-year average must be used for the baseline calculation. The 10-year period selected by WR&C is 1995-2005. From this period, the average baseline is 170 gpcd.

Per the UWMP Guidelines, the 2020 goal must be no more than 95 percent of a five-year gpcd average ending no earlier than 2007. The 5-year gpcd average is calculated in Table 3-3. The 2007 five-year average of 155 gpcd was selected. Therefore, the 2020 goal must be less than 147 gpcd.

Table 3-2. Base Daily Per Capita Use (DWR Table 14)

Year	Population Served	Water Supplied, mgal	Annual gpcd	10-year Running gpcd
1995	50,716	3,101	168	
1996	52,210	3,205	168	
1997	53,400	3,452	177	
1998	54,735	3,213	161	
1999	56,188	3,601	176	
2000	57,773	3,622	172	
2001	58,065	3,692	174	
2002	58,148	3,623	171	
2003	58,381	3,510	165	
2004	58,671	3,591	168	170
2005	58,771	3,274	153	168
2006	58,980	3,171	147	166
2007	59,533	3,143	145	163
2008	60,109	3,201	146	162
2009	60,693	2,797	126	157
2010	60,214	2,606	119	151

Note: gpcd values for 2009 and 2010 likely impacted by the Temporary Impairment, rate increases, hydrologic factors, poor economy, and other elements.

Table 3-3. 5-Year Range Base GPCD (DWR Table 15)

Year	Population Served	Water Supplied, mgal	Annual gpcd	5-year Running gpcd
2003	58,381	3,510	165	
2004	58,671	3,591	168	
2005	58,771	3,274	153	
2006	58,980	3,171	147	
2007	59,533	3,143	145	155
2008	60,109	3,201	146	152
2009	60,693	2,797	126	143
2010	60,214	2,606	119	137

There are four target methodologies as defined by the DWR in the 2010 UWMP Guidelines:

1. 20 percent reduction of baseline demand.
2. Maintain demands equal to individual water budgets.
3. 95 percent of 2020 Task Force hydrologic region gpcd goal.
4. Calculated potential savings.

The City is selecting Method 1, 20 percent of baseline demand as its 2020 goal. With a baseline demand of 170 gpcd, the 2020 goal is 136 gpcd. The selected base year information and selected targets are summarized in Tables 3-4 and 3-5, respectively.

Table 3-4. Base Period Ranges (DWR Table 13)

Base	Parameter	Value
10-15-Year Base Period	2008 total water deliveries (Potable plus Adobe and Rooster Run)	3,400 mgal
	2008 total volume recycled water delivered (Adobe Creek and Rooster Run)	200 mgal
	2008 recycled water as percent of total	5.8 %
	Years in base period	10
	Year beginning base period	1995
	Year ending base period	2004
5-Year Base Period	Years in base period	5
	Year beginning base period	2003
	Year ending base period	2007

Table 3-5. Water Demand Targets

Year	GPCD Target
2015	153
2020	136

3.2.2 Regional Group 2020 Alliance

The DWR UWMP Guidelines allow for 20x2020 compliance to be met by a group of water agencies, known as a regional alliance. If the regional alliance meets its 2015 and 2020 target, all members are considered in compliance. However, if the regional goals are not met, an agency can still be in compliance by meeting their own individual goals. The City, along with the other SCWA retailers, formed a regional alliance as listed in Table 3-6. The regional alliance letter agreement is included in Appendix D. The group has selected Target Option 1, 20 percent of baseline by 2020. The baseline calculation is a weighted average of each member's own 2015 and 2020 goals as shown in Table 3-7. The development of each member's individual goal is presented in each respective individual UWMP. The projected 2015 and 2020 gpcd values are presented in Table 3-8.

Table 3-6 Regional Group 2020 Alliance Members

City of Petaluma	Sonoma
North Marin Municipal Water District	Cotati
City of Santa Rosa	Windsor
Rohnert Park	Marin Municipal Water District
Valley of the Moon Water District	

Table 3-7. Regional Compliance Target Development

	2010 Population	Individual 2015 Target, gpcd	2010 Pop. X 2015 Target, gpd	Individual 2020 Target,gpcd	2010 Pop. X 2020 Target,pgd
Santa Rosa	163,436	136	22,227,296	127	20,756,372
North Marin	61,102	161	9,822,932	143	8,724,716
Petaluma	60,214	153	9,212,742	136	8,189,104
Rohnert Park	43,398	140	6,075,720	119	5,164,362
VOMWD	23,478	136	3,193,008	124	2,911,272
Sonoma	11,426	194	2,216,644	173	1,976,698
Cotati	7,711	134	1,033,274	130	1,002,430
Windsor	28,134	143	4,023,162	130	3,657,420
MMWD	190,600	137	26,074,080	124	23,634,400
Total:	587,596	--	83,601,469	--	75,770,206
Regional Target	= 83,601,469/ 587,596	142 gpcd		=75,770,206/ 587,596	129 gpcd

Note: Population and targets from each respective member's UWMP. Table may be modified pending adoption of each respective member's UWMP.

Table 3-8. Regional Compliance Target Projections

	2015 Population	2015 Water Demand, AF	2020 Population	2020 Water Demand, AF
Santa Rosa	194,851	27,194	204,519	27,934
North Marin	62,589	11,471	64,804	11,376
Petaluma	63,306	10,627	66,376	10,112
Rohnert Park	46,400	5,348	47,900	5,306
VOMWD	24,174	3,465	24,873	3,445
Sonoma	12,149	2,605	12,871	2,643
Cotati	8,105	1,079	8,518	1,096
Windsor	29,515	5,019	30,715	5,173
MMWD	195,200	27,761	198,200	27,359
Total:	637,687	95,032	659,825	94,602
Regional Value	--	133	--	128

Note: Population and demand projections from each respective member's UWMP. Table may be modified pending adoption of each respective member's UWMP.

3.3 Projected Water Demands

This section presents projected water use by customer type, water sales to other agencies, and additional water use. WR&C's customer water use projections are based on the current City of Petaluma General Plan land use projections, as well as other projections for the City's customers outside of the General Plan's Urban Growth Boundary. The current General Plan was approved in 2008 and projected land use conditions out to 2025. Due to the economic conditions since Plan approval, the near term growth rate has not matched the projections in the General Plan. To account for this delay in growth and

the anticipated slowdown from the recession, this analysis shifted the General Plan end conditions from 2025 to 2035.

The General Plan projects growth using land use categories that differ from the customer account categories defined in the DWR 2010 UWMP Guidelines. Water demands projected from the land use categories are grouped into the UWMP customer account categories to provide the required UWMP information. This sorting of the known data sets strengthens the water demand projections obtained from the land use projections.

3.3.1 Customer Account Projections

Table 3-9 lists the past and projected potable water customer accounts. The Utility also provides secondary recycled water to agriculture customers. These customers are not potable water customers and are not included in Table 3-9. The agricultural customers and secondary recycled system demands are discussed in Section 4.

Table 3-9. Projected Customer Category Units (DWR Tables 5-7)

Customer Category	Number of Accounts						
	2005 (actual)	2010 (actual)	2015	2020	2025	2030	2035
Single Family	16,981	17,424	18,016	18,466	18,917	19,368	19,818
Multi-Family	304	309	389	442	495	548	601
Commercial	1,190	1,221	1,329	1,395	1,460	1,526	1,592
Industrial	25	22	26	28	30	32	34
Institutional/ Government	--	--	--	--	--	--	--
Landscape	434	447	485	509	533	557	581
Agricultural	--	--	--	--	--	--	--
Total:	18,934	19,421	20,245	20,840	21,435	22,030	22,625

Note: Institutional/Government accounts are included in the Commercial category.
Agriculture customers are non-potable only and not included in table.

3.3.2 Customer Potable Water Demand Projections

Table 3-10 presents the projected potable water demands through 2035. Water demands represent the gross demand estimate. This estimate is based on analysis of past unit water demand trends, conservation program efforts to date, land use projected demographics, weather, economic conditions, water rates, and other factors. The gross water demands do not include future conservation programs, recycled water programs, or other demand management efforts. Plans to meet the City's 2015 and 2020 gpcd goals are discussed below in Section 3.3.5.

Table 3-10. Projected Gross Potable Water Demands (DWR Tables 5-7)

	Water Demands, acre-feet per year				
	2015	**2020**	**2025**	**2030**	**2035**
Single Family	6,031	6,183	6,334	6,486	6,638
Multi-Family	1,192	1,360	1,528	1,696	1,864
Commercial	1,893	2,004	2,114	2,225	2,336
Industrial	291	307	323	340	356
Institutional/ Government	--	--	--	--	--
Landscape	1,347	1,426	1,505	1,584	1,663
Agricultural	--	--	--	--	--
Total Gross Demands:	10,754	11,280	11,805	12,331	12,856

Note: All accounts are metered.
Institutional/Government included in Commercial.
Agriculture customers are non-potable only and not included in table.

New legislation requires an agency to project water demands for low-income housing needs. The General Plan 2025 incorporates the 2009-2014 Housing Element. The Housing element identified the City's portion of the regional housing need for very low and low-income household housing needs. The 2009 housing needs are identified as 364 units for very low-income households, and 319 units for low-income households. These new housing needs are assumed to continue through to 2035. This projection will be updated when the City updates the Housing Element after 2014. Table 3-11 lists the projected water demands for low-income housing units.

Table 3-11. Low-Income Projected Water Demands

Low –Income Projected Water Demands, acre-feet per year				
2015	**2020**	**2025**	**2030**	**2035**
150	150	150	150	150

3.3.3 Sales to other water agencies

The City does not sell water to other agencies and does not project any future water sales at this time.

3.3.4 Additional Water Uses and Losses

Additional water uses and losses within the service area include recycled water use, non-billed water, and distribution system losses. Table 3-12 presents the past and projected values for each component. The category "System Losses" includes uses for fire protection, flushing, sewer cleaning, bill adjustments, and/or other non-billed uses. The category also includes loss from leaks and meter inaccuracies. Estimated system losses are based on a percent of total water demand. Future system losses (including all non-revenue water) are estimated at approximately eight percent of total sectoral water demand based on historical data. System Losses for 2005 and 2010 are actual based on meter records.

WR&C currently operates a secondary treatment level recycled water system that supplies irrigation water to agriculture and two golf courses. The Utility has developed a

phased approach for a new tertiary recycled water system that will serve mostly parks and schools, resulting in significant potable water offset. The first phase is already complete with construction of the Water Recycling Facility that can provide tertiary treated water. The next phase is scheduled to commence in the 2011 capital improvement program. The extent of tertiary distribution system implementation will depend on many factors such as cost, wastewater discharge requirements, economic conditions, and others. Therefore, full program implementation is not yet scheduled. The projected recycled water volumes in Table 3-12 represent the potable offset volume from the second phase of the tertiary system, and assumes implementation by 2015. Recycled water plans are further discussed in Section 4.

Although there are no other uses projected at this time, WR&C continues to evaluate its future water resource needs and may develop plans for additional water uses as necessary.

Table 3-12. Additional Water Uses and Losses (DWR Table 10)

	Water Use, acre-feet per year						
	2005 (actual)	**2010 (actual)**	**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	0	131	670	670	670	670	670
System Losses	696	712	975	1,023	1,070	1,118	1,166
Total:	696	843	1,645	1,693	1,740	1,788	1,836

Note: Recycled water use listed is only the potable offset portion of the planned recycled use. The final implementation schedule is not yet approved. Table value assumed first phase implemented by 2015.

3.3.5 Total Water Demands

Total potable water demands are summarized in Table 3-13. The total gross water demands are greater than the Utility's 2015 and 2020 gpcd targets. The Utility intends to implement a combination of demand management efforts to reduce the gross demand to meet the gpcd targets. Specifically, WR&C will continue implementation of its extensive conservation program as described in Section 5. WR&C will continue to evaluate its water rate schedule and update the rates as required. As discussed in Section 4, the Utility has planned an extensive recycled water system to be used for potable water offset as part of the current General Plan. The system is divided into phases; with specific phases implemented in the future to help meet the gpcd targets as well as address its wastewater disposal requirements. The expected total demand reductions from the Utility's programs are summarized in Table 3-13, with the net demand and gpcd versus targets presented. As shown, the WR&C projects it will meet its gpcd targets in 2015 and 2020.

Table 3-13. Total Water Demands (DWR Table 11)

	Total Water Use, acre-feet per year						
	2005 (actual)	**2010 (actual)**	**2015**	**2020**	**2025**	**2030**	**2035**
Water Deliveries to Customers	9,351	7,286	10,754	11,280	11,805	12,331	12,856
Sales to Other Agencies	0	0	0	0	0	0	0
System Losses	696	712	975	1,023	1,070	1,118	1,166
Subtotal Gross Demands:	10,047	7,998	11,729	12,302	12,875	13,449	14,022
Demand Reduction Programs:	--	--	1,102	2,190	2,295	2,402	2,507
Net Potable Water Demand	10,047	7,998	10,627	10,112	10,580	11,047	11,515
Population	58,771	60,214	63,306	66,376	69,447	72,517	75,587
gpcd	153	119	150	136	136	136	136
Gpcd Target	--	--	153	136	--	--	--

Note: Demand reduction programs include a mix of conservation, recycled water potable offset, and other demand management programs. Population values are total service area population.

WR&C provided its gross and net water demands to its wholesaler, Sonoma County Water Agency, as presented in Table 3-14.

Table 3-14 Retail Water Demand Projections to SCWA (DWR Table 12)

	Demand Projections Provided to SCWA, acre-feet per year					
	Contracted Volume	**2015**	**2020**	**2025**	**2030**	**2035**
Gross Demand	13,400	11,729	12,302	12,875	13,449	14,022
Demand Reduction Programs	--	1,102	2,190	2,295	2,402	2,507
Net Demand	13,400	10,627	10,112	10,580	11,047	11,515

Note: 2005 and 2010 net demand values are listed in Table 3-1.

4 Water Supplies

WR&C has historically used surface water, groundwater, and recycled water to supply its various customer demands. The near-term future supply strategy relies on surface water from the Sonoma County Water Agency (SCWA or Agency) and recycled water from its own water recycling facility. This section presents the description of existing and projected future supplies.

4.1 Surface Water

The City of Petaluma purchases water from SCWA. SCWA is supplied by the federal Russian River Project, which it operates along with the Agency's appurtenant water transmission system. The key elements to the Russian River system are the Coyote Valley Dam, which creates Lake Mendocino on the East Fork Russian River, and Warm Springs Dam, which creates Lake Sonoma on Dry Creek (a tributary to the Russian River). The Agency manages releases at both reservoirs for water supply and to maintain required minimum flows in the Russian River and Dry Creek pursuant to State Water Resources Control Board (SWRCB) Decision 1610 (D1610). Flood control releases from these reservoirs are controlled by the United States Army Corps of Engineers (USACE). Flows in the Russian River are augmented by the Pacific Gas & Electric Company's (PG&E) Potter Valley Project, which diverts a portion of the Eel River flows to the East Fork of the Russian River upstream of Lake Mendocino.

Future Potter Valley Project diversions from the Eel River into the Russian River via Pacific Gas & Electric's Project are regulated by a number of agencies including the Federal Energy Regulatory Commission (FERC), and NOAA-NMFS. In 2004, FERC issued a final decision that reduced the amount of diversion from the Eel River into the Russian River by approximately 15 percent to protect Eel River fisheries. This decision is still under appeal.

Water from the Russian River is diverted by the Agency near Forestville and conveyed via its transmission system to its wholesale customers, which includes the City. The City receives the SCWA supply through the Petaluma Aqueduct. The Petaluma Aqueduct has a diameter of 33 inches. This provides a physical limitation of 38 million gallons per day (MGD) at 10 feet per second.

The City of Petaluma, along with the other SCWA contractors, signed the Restructured Agreement for Water Supply (Restructured Agreement) in 2006. The Restructured Agreement provides for the financing, construction, and operation of diversion facilities, transmission lines, storage tanks, booster pumps, conventional wells, and appurtenant facilities. The agreement does not provide for a fixed supply or daily rate. Instead, the agreement states that SCWA is not obligated to provide the City of Petaluma more than 13,400 acre-feet per year or more than 21.8 million gallons per day as an average daily rate during any one month.

The City of Petaluma does not hold any water rights for the SCWA supply. SCWA holds four State Water Resources Control Board (SWRCB) permits (12947A, 12949, 12950,

and 16596). The permits authorize the Agency to store water in Lake Mendocino (122,500 ac-ft) and Lake Sonoma (245,000 ac-ft), and to divert and re-divert 180 cubic feet per second (cfs) (116.3 MGD) of water from the Russian River and Dry Creek, up to 75,000 ac-ft/yr.

The permits also establish minimum instream flow requirements for fish and wildlife protection and Russian River recreational considerations. These minimum instream flow requirements vary according to the hydrologic cycle (i.e., dry water years versus normal water years) as defined by the SWRCB's Decision 1610. Recent studies discussed below suggest the minimum flows required by D1610 may negatively impact the fishery habitat. In addition, other issues impact the management of the Russian River system. SCWA is working to improve its supply reliability through multiple efforts. The following describes each issue and current status.

4.1.1 Water Supply Projects

SCWA is currently planning multiple supply and reliability projects in response to the issues as described in these sections. Projects include efforts to implement the Biological Opinion, improve supply reliability, improve infrastructure reliability, and enhance in-stream conditions. Detailed information regarding SCWA's water supply projects is presented in SCWA's UWMP. The City understands that SCWA's supply projects will not provide any new supply to current volumes, but may increase reliability or modify operations of SCWA's facilities. At this time, the City does not expect these future supply projects to impact its current contract supply upper limit of 13,400 acre-feet per year.

4.1.2 Russian River ESA Section 7 and Biological Opinion

The Central California coast steelhead, California Coast Coho salmon, and California Coast Chinook salmon were listed as threatened under the federal Endangered Species Act (ESA). This listing began a process of investigation and review as part of the ESA Section 7 consultation requirements. The National Marine Fisheries Service (NMFS) issued its 15-year Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Army corps of Engineers, the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District (MCRRFCWCID) in the Russian River Watershed (Russian River Biological Opinion) on September 24, 2008. In summary, the Biological Opinion concluded that the elevated river flows required by Decision 1610 were adversely affecting the fish habitat.

The Biological Opinion (BO) lists Reasonable and Prudent Alternatives (RPAs) to reduce the affects to fish habitat from the SCWA, Army Corps, and MCRRFCWCID operations. The BO identifies RPAs for the next 15 years that address SCWA operations and water supply impacts and include:

- Reducing summertime flows in the Russian River and Dry Creek
- Enhancing six miles of habitat in Dry Creek
- Creating a freshwater lagoon in the estuary during summer months

- Monitoring both habitat and fish in Dry Creek, the estuary, and Russian River
- Eliminating impediments to fish spawning or improving habitat in several streams.

The BO concludes that reducing the minimum instream flow requirements will assist implementation of other RPAs. SCWA filed a petition in September 2009 to the SWRCB requesting permanent changes to Decision 1610 minimum flow requirements in line with the Biological Opinion. SWRCB will act on the petition upon completion of the EIR for Fish Habitat Flows and Water Rights Project as described below. Until that time, SCWA must request temporary changes to the Decisions 1610 minimum flows annually per the BO recommendations. SCWA received its first temporary flow reduction petition under the BO recommendations for 2010.

SCWA developed the Fish Habitat Flows and Water Rights Project to address the BO RPAs and improve supply reliability. The project includes updating the Decision 1610 minimum flow requirements per the BO, modifying reservoir release schedules and volumes, petitioning SWRCB to change the methodology used to define hydrologic year types to include parameters in the Russian River watershed, and to modify SCWA's water rights to reflect current conditions, possibly modify place of use, and make other clarifications. A Notice of Preparation for the EIR was posted on September 29, 2010.

4.1.3 Seasonal hydrologic constraints on the Russian River diversion facilities

The ability of SCWA to divert water from the Russian River can be limited by the rate of recharge to the aquifer through the streambed. To augment this recharge capacity, the Agency has constructed several infiltration ponds that surround the Agency collector wells. Diversions and infiltration operations are also assisted by an inflatable dam. The Agency's water production capacity is complex and will vary from year to year based on a number of factors. In any given year, Agency production needs depend on demands, which are a function of temperature, precipitation, growth, and hydrologic conditions. The hydrologic conditions are in turn a function of groundwater levels and the permeability of the riverbed, which in turn impacts whether or not supply is groundwater or considered underflow from the river. An Agency analysis of water trends from 1997 to 1999 concluded that stressed hydrologic conditions occurred in the fall/early winter, followed by non-stressed conditions in the winter, and stressed conditions again in the spring, prior to the rubber dam being raised. Stressed hydrologic conditions are determined by monitoring groundwater levels and noting the decline in water levels as the Agency pumps water to meet demands.

Agency staff is continuing to analyze the seasonal constraint and its potential impact on the ability to provide water to its customers. As non-peak demands continue to rise, the Agency will increasingly rely on using the inflatable dam more continuously throughout the year if conditions allow use. Should the Agency be precluded from using the dam due to mechanical or environmental constraints, the production capacity of the Agency transmission system could be temporarily impaired.

4.1.4 SCWA Water Supply Strategy Action Plan

SCWA developed the Water Supply Strategy Action Plan in 2010. The action plan addresses strategies and goals to improve supply reliability, implement the BO requirements, and other issues. The City of Petaluma is collaboratively working with SCWA and the other contractors to address the regional water supply and demand issues.

4.1.5 SCWA Water Supply Reliability

SCWA's diversions are currently limited to 75,000 AFY. The Restructured Agreement lists a total of 77,445 AFY to the Water Contractors under Section 3.1 Delivery Entitlements of Water Contractors. The Restructured Agreement states SCWA is not obligated to provide the City of Petaluma more than 13,400 acre-feet per year and 21.8 mgd average daily rate during any month. Until modified through an updated contract or other means, the City assumes its reliable supply has not changed from the Restructured Agreement. The Agreement acknowledges supply shortages, but leaves actual allocation values to be determined depending on the specifics of the shortage situation. Table 4-1 lists the projected surface water supply expected through 2035. Dry-year supply reliability analysis and summary is presented in Section 4.6.

Table 4-1. Surface Water Supplies (DWR Table 17)

	Projected Supply Availability, acre-feet per year					
	2010 (actual)	2015	2020	2025	2030	2035
SCWA	6,993	13,400	13,400	13,400	13,400	13,400

Note: 2010 value is actual volume delivered; volume available was 13,400 AF per Restructured Agreement.

4.2 Groundwater

WR&C maintains wells that pump from the Petaluma Valley Basin. The California Department of Water Resources Bulletin 118, 2003 Update identifies the Petaluma Valley Basin as Basin Number 2.1. The total basin acreage is listed at 46,100 acres. The groundwater basin is defined by Bulletin 118 and is generally the Petaluma River Valley starting at Penngrove on the north and following the valley south to San Pablo Bay, as shown in Figure 4-1.

The existing groundwater subbasin geology generally exhibits low permeability and limits groundwater storage to mostly fractured rock and inconsistent alluvium opportunities. According to past studies, including the DWR Bulletin 118-4 study of the Petaluma Valley Basin in 1982, there are no known geological units that would typically provide favorable, high-yield groundwater opportunities. The water quality is impacted by arsenic, iron, manganese, nitrate, and coliform. Customers have also noted taste and odor issues when the groundwater wells are used to supplement surface water. Private shallow wells located near the tidal influence portion of the Petaluma River have shown salt water intrusion, but there were no instances of salt water intrusion in WR&C's wells identified in the studies.

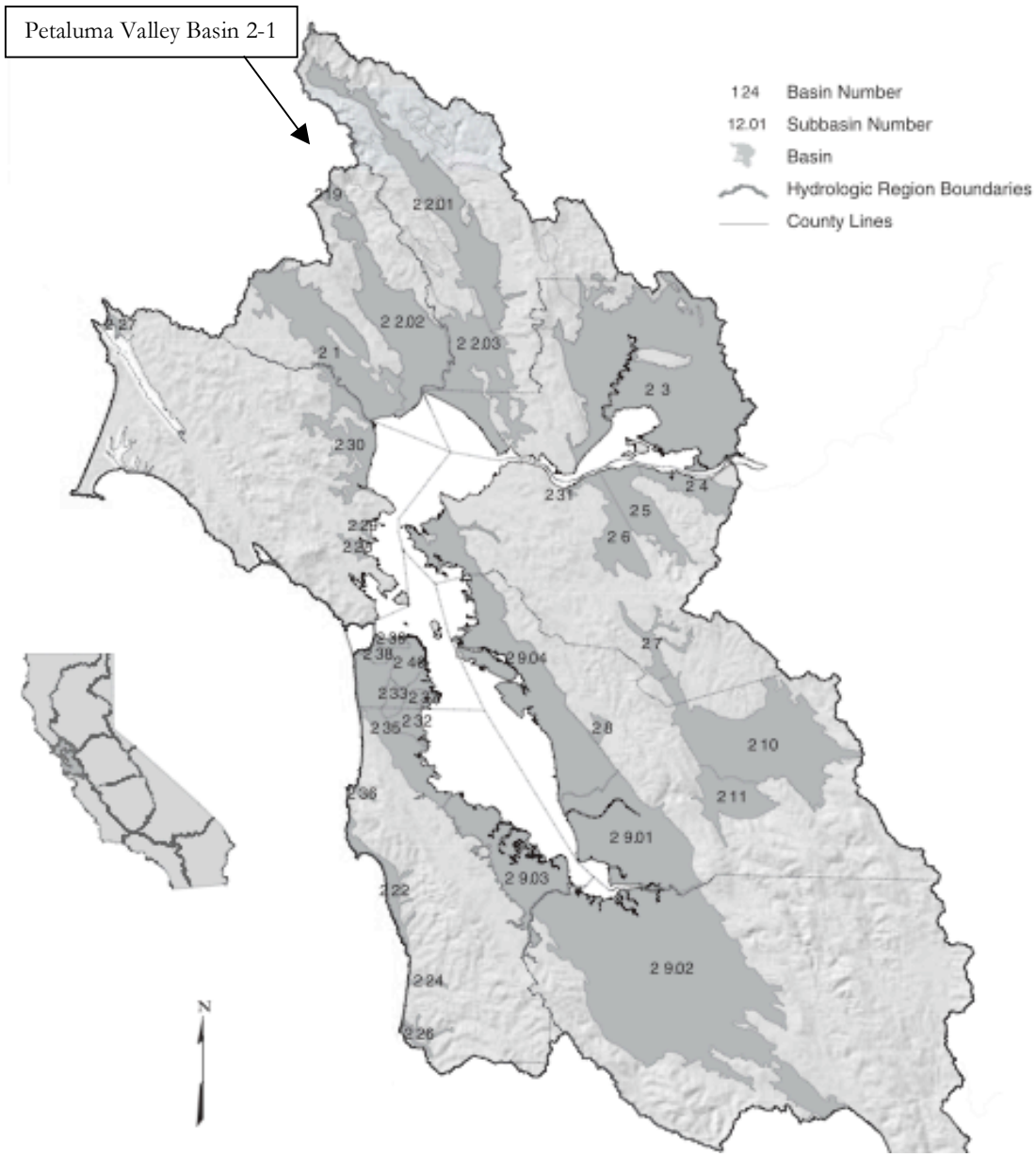

Figure 4-1. Petaluma Valley Basin 2-1 per Bulletin 118 Groundwater Basin Map

WR&C does not rely on groundwater as a significant portion of supply due to specific yield and water quality limitations. Since 2000, groundwater is only used for peak water demand needs or to minimize short-term supply cost impacts to customer rates. Currently, only 6 of the existing 12 active wells are used for production. Many of the wells are inactive due to low yields, poor water quality, or deteriorating well conditions. The active wells range in production from approximately 100 gpm to 1,063 gpm. According to Bulletin 118, there is insufficient information to develop total basin yield or the groundwater budget. Previous studies conducted by WR&C estimate WR&C's

maximum production rate without negative impact to quality and drawdown at 2,000 to 3,000 acre-feet per year (2025 General Plan, Technical Appendix Volume 4, F-2 Groundwater Feasibility Study).

A groundwater management plan for the basin has not been developed yet. However, WR&C has begun efforts to improve monitoring and knowledge of the basin for further use. The City has registered with the DWR California Statewide Groundwater Elevation Monitoring (CASGEM) system. The City is the reporting agency for Basin 2-1 and will monitor groundwater elevations and quality in the basin to improve the basin knowledge and help build a better understanding of sustainable yield.

WR&C reduced its groundwater use to zero from 2004 to 2006. However, groundwater use was increased in 2007 and 2008 due to a temporary surface water supply shortage due to SCWA financial operational constraints. The Utility intends to only use groundwater in the future as emergency backup supply, peaking needs, or other short-term scenarios. WR&C did use 328 million gallons of groundwater in 2010 as a short-term measure to mitigate the impacts of the SCWA wholesale rate increase. The wholesale water rates were increased, and the Utility opted to supply more groundwater in an effort to reduce its wholesale water costs to maintain the operating revenue balance. Since that time, WR&C has developed a rate study and will implement a rate plan designed to factor in the increase in its wholesale water costs over the next five years. With the new rate plan, the Utility intends to maintain its groundwater usage to only minimum short-term scenarios. WR&C continues to maintain and sample the wells per State requirements and to keep the wells in working condition should they be required in an emergency. This maintenance operation only produces a small amount of water per year, approximately 10 to 20 acre-feet. This additional water is not part of the supply strategy and can fluctuate annually, depending on maintenance scheduling.

Groundwater use from 2006-2010 is summarized in Table 4-2. Projected groundwater use is summarized in Table 4-3.

Table 4-2. Past Groundwater Usage (DWR Table 18)

Basin Name		Volume of Groundwater Pumped, acre-feet				
	Metered or Un-metered	2006	2007	2008	2009	2010
Petaluma Valley 2-1	metered	0	277	498	1,073	1,007
As a percent of total water supply	--	0	3%	5%	12%	13%

Note: Total water supply for 2006-2010 provided in Table 3-2.

Table 4-3. Projected Groundwater Usage (DWR Table 19)

	Projected Groundwater Usage, acre-feet per year				
Basin Name	2015	2020	2025	2030	2035
Petaluma Valley 2-1	0	0	0	0	0

4.3 Recycled Water

The City owns and operates its own wastewater collection and treatment system. The Utility recently constructed a new Water Recycling Facility (WRF) that can treat wastewater to Title 22 recycled water standards. The new WRF is located south of town, adjacent to the existing oxidation ponds on Lakeville Highway. The WRF is regulated in the National Pollution Discharge Elimination System (NPDES) permit, promulgated by the San Francisco Bay Region of the California Regional Water Quality Control Board (RWQCB). The NPDES permit allows for discharge of secondary effluent into the Petaluma River adjacent to the WRF from October 21 through April 30 of each year.

4.3.1 System Description

The WRF produces both secondary and tertiary effluent to meet the Water Recycling Criteria contained in the California Code of Regulation, Title 22. The City's General Plan 2025 Update included a recycled water planning appendix (GP Recycle Water Appendix). The GP Recycled Water Appendix recommends two recycled water systems; secondary and tertiary. The purpose of the recycled water program is two-fold, it provides potable water offset and it allows for effluent reuse during the non-river discharge restriction period.

The new 6.7 MGD ADWF WRF produces two levels of recycled water: Title 22 disinfected secondary-23 effluent for restricted reuse, and Title 22 disinfected tertiary effluent for unrestricted reuse. WRF preliminary treatment includes screening and grit removal, secondary treatment through oxidation ditches, and secondary clarification. After clarification, the flow is split between the secondary and tertiary recycled water treatment facilities. Disinfected secondary-23 facilities consist of oxidation ponds, treatment and polishing wetland cells, sodium hypochlorite disinfection, and recycled water pumping. During the non-river discharge season (May 1st to October 20th), a combination of secondary effluent and pond effluent will be disinfected to Title 22 disinfected Secondary-23 standards using the existing disinfection facilities. Tertiary treatment facilities include chemical addition and flocculation, filtration, and UV disinfection. The current capacity of the tertiary system is 5.3 mgd.

Currently, only the secondary distribution system is fully operational. It serves agricultural and industrial customers mostly located near the WRF. The tertiary distribution system will serve customers for various tertiary effluent uses acceptable per the Title 22 unrestricted use definitions such as parks, golf courses, schools, and business parks, as well as industrial sites. Although the WRF is producing tertiary effluent, the tertiary distribution system is not fully constructed and currently uses secondary effluent

to supply two golf courses connected to the distribution system. The WRF also uses recycled water for process water.

4.3.2 Wastewater and Projected Recycled Water Supply

Table 4-4 lists the projected wastewater collected and the volume of recycled water produced. The volume of influent treated to recycled water standards is assumed equal to potential demand listed in Table 4-7. Up until 2009 when the new WRF went online, a portion of the influent flow during wet weather events was bypassed around the influent structure of the previous wastewater treatment plant located at Hopper street and sent to the oxidation ponds for treatment. This results in some years having an effluent volume higher than influent volume. Table 4-5 lists the past and projected volume of wastewater disposal. Projected values reflect the current NPDES discharge schedule.

Table 4-4. Wastewater Collection and Treatment (DWR Table 21)

	Annual Volume, acre-feet per year						
	2005 (actual)	**2010 (actual)**	**2015**	**2020**	**2025**	**2030**	**2035**
Wastewater Collected in Service Area	7,264	6,287	6,670	7,050	7,430	7,820	8,200
Volume Treated to at least Secondary 23 Recycle Water Standard	7,316	6,192	3,319	3,319	3,319	3,319	3,319

Note: In 2005, some influent flow was bypassed to oxidation ponds and not included in influent value. Volume treated to secondary or tertiary recycled water standards based on projected recycled water demands in Table 4-7.

Table 4-5. Projected Wastewater Disposal (DWR Table 22)

		Annual Volume, acre-feet per year					
Disposal Method	**Treatment Level**	**2010 (actual)**	**2015**	**2020**	**2025**	**2030**	**2035**
River discharge	Disinfected Secondary-23	4,646	3,351	3,731	4,111	4,501	4,881
Secondary - 23 Reuse System	Disinfected Secondary-23	1,546	1,982	1,982	1,982	1,982	1,982
Tertiary Reuse System	Tertiary	0	1,337	1,337	1,337	1,337	1,337
Total:		6.192	6,670	7,050	7,430	7,820	8,200

Note: Recycled water disposal volumes based on projected recycled water demands in Table 4-7.

4.3.3 Recycled Water Projected Use

The 2005 UWMP projected recycled water use based on the assumption that a portion of the tertiary distribution system would be installed by 2010. Due to the economic recession, decreased water demands, and other factors, the City has not constructed any additional recycled water distribution infrastructure since the 2005 UWMP. Table 4-6 compares the 2010 projected recycled water use from the 2005 UWMP to actual use.

Table 4-6. 2005 to 2010 Recycled Water Use Comparison (DWR Table 24)

User Type	2005 UWMP Projection for 2010, AF	2010 Actual Use, AF
Agriculture	1,505	1,190
Landscape	941	356
Wildlife Habitat	0	0
Wetlands	0	0
Industrial	0	121
Landscape irrigation at WRF	123	10
Total:	2,569	1,677

Note: The 2005 UWMP included all WRF use as Landscape, though most is used for process water, as shown for 2010.

The City's GP Recycled Water Appendix evaluated potential recycled water application sites and identified landscape irrigation locations within the City, and agricultural applications south and east of the City boundaries. The Appendix limited its identification of agriculture reuse demands to the estimation of available supply, considering seasonal storage requirements and in-City tertiary demands. Total potential demands, un-constrained by infrastructure or tertiary demand needs, are assumed to be higher. WR&C will investigate additional demands and uses for its secondary recycled water supply and will be updating its existing contracts with the secondary recycled water users in 2013, or before.

Table 4-7 lists the current identified most probable recycled water uses through 2035. Values in Table 4-7 assume the Water Utility completes the tertiary system for Area A (as described in the GP Recycled Water Appendix), and continues to serve its existing agricultural customers. Values could be higher if the Water Utility implements the later phases of its tertiary system or if more agricultural or other demands are identified. The values in Table 4-7 indicate this future unknown potential with a "+". The feasibility for potential projects is subject to WR&C's overall water supplies and demands, in addition to future NPDES discharge requirements. The Utility will continue to track and monitor these issues and develop a suite of supply, demand, and discharge options. Potential uses may include elements other than agriculture and landscape, as shown in Table 4-7. The Landscape category includes golf courses and commercial customer irrigation. Depending on costs, regulatory issues, agriculture economy, industrial customers, and other factors, recycled water options may be feasible and selected for implementation.

Table 4-7. Potential Future Recycled Water Uses (DWR Table 23)

User Type	2015	2020	2025	2030	2035
Agricultural	1,982+	1,982+	1,982+	1,982+	1,982+
Landscape	1,216+	1,216+	1,216+	1,216+	1,216+
Wildlife Habitat	0+	0+	0+	0+	0+
Wetlands	0+	0+	0+	0+	0+
Industrial	121+	121+	121+	121+	121+
Groundwater Recharge	0+	0+	0+	0+	0+
Seawater Barrier	0+	0+	0+	0+	0+
Geothermal/Energy	0+	0+	0+	0+	0+
Indirect Potable Reuse	0+	0+	0+	0+	0+
Total:	3,319+	3,319+	3,319+	3,319+	3,319+

Note: Industrial includes process needs at the WRF.
Table only includes potable offset and current agricultural recycled water uses, does not include additional agricultural or other secondary effluent uses.

4.3.4 Methods to Encourage Recycled Water Use

The City's existing secondary recycled water customers received supply according to the terms and conditions of each respective contract. In the past, the City has provided financial incentives to its recycled water customers. The City will review contract and incentive terms in the future to support the integrated water resources strategy. Table 4-8 lists the current secondary recycled water contract amounts that are subject to the financial incentives for use. Many of these contracts will be renegotiated in 2013. Table 4-8 assumes volumes of existing identified users will not change. However, it is likely recycled water uses and incentives will change in the future to reflect the future supply, demand, and discharge issues. Additional incentives could be provided in the case of industry location efforts, private water supply impacts, wetland or habitat creation, or others. Additional recycled water use as a result of new incentives is unknown at this time and will be addressed as the WR&C's water resources strategy addresses expansion of the recycled water program.

Table 4-8. Methods to Encourage Recycled Water Use (DWR Table 25)

	Projected Recycled Water Use, acre-feet per year					
Action	**2010 (actual use)**	**2015**	**2020**	**2025**	**2030**	**2035**
Financial Incentive	1,546	2,600	2,600	2,600	2,600	2,600

Note: projected volumes are only for the existing customers under contract.

4.4 Other Supply Opportunities

Currently there are no programs or projects for water transfers or exchanges of water to create additional supply for Petaluma. Until the WSTSP is constructed, there may be opportunities to wheel water through Petaluma's infrastructure, but no programs have been identified. WR&C continues to monitor future potential issues and will identify additional opportunities that may benefit Petaluma and the region's water needs.

One such potential opportunity is the use of grey water. Water from rain runoff and even washing machines could be captured and stored for use by the individual homeowners. Grey water system consideration for public supply purposes in California is still a developing field. The total potential supply for grey water systems depends on precipitation timing, maximum storage availability, indoor water use, and other factors. Grey water systems are currently permitted in Petaluma. WR&C will continue to monitor grey water system results from other communities to determine additional applicability and opportunities for Petaluma.

WR&C has not identified any current desalination opportunities. However, the City is the reporting agency for the California Statewide Groundwater Elevation Monitoring program for the groundwater basin. The reporting area covers wells near the San Pablo Bay and surface water bodies that are likely under tidal influence. WR&C will work with property owners to monitor groundwater quality within the watershed and will gain a better understanding of desalination opportunities in the future.

4.5 Future Water Supply Projects

WR&C continues to investigate local supply options to supplement its supply from SCWA. The current strategy includes implementing a combination of demand management measures and recycled water projects to meet any near-term supply reductions from SCWA. WR&C will continue to investigate groundwater opportunities to further understand long-term yields and costs for a potential groundwater supply beyond emergency or peak use.

Table 4-9 lists the future potable offset tertiary recycled water supply projects. The City's GP Recycled Water Appendix identifies areas throughout the City for tertiary recycled water service. The actual date for putting these areas on line is dependent upon future SCWA supplies. Other than Area A (as listed in the GP Recycled Water Appendix), WR&C is not including start dates for these projects but will monitor supply needs and implement as necessary. WR&C planning efforts also include future potential agricultural needs for secondary recycled water. These projects are not included in Table 4-9, but may be included at a later date depending on future supply and demand issues.

Table 4-9. Future Water Supply Projects (DWR Table 26)

		Supply Volume, acre-feet per year				
Project	**Start-Online Date**	**Normal Year Supply – Potable offset**	**Single Dry Year Supply**	**Multiple Dry Year - Year 1 Supply**	**Multiple Dry Year - Year 2 Supply**	**Multiple Dry Year - Year 3 Supply**
Recycled Water Area A	2015	670	670	670	670	670
Recycled Water Area C	To be determined	370	370	370	370	370
Recycled Water Area E	To be determined	10	10	10	10	10
Recycled Water Area G	To be determined	370	370	370	370	370
Total:		1,420	1,420	1,420	1,420	1,420

Notes: Table includes tertiary potable offset recycled water supply projects only. Secondary recycled water projects for agricultural use are not included because they do not offset potable demands. Project areas as defined in the GP Recycled Water Appendix.

4.6 Supply Summary and Reliability

Table 4-10 summarizes the City's current and projected water supplies. WR&C projects zero groundwater use in the future until a better understanding of long-term yield, water quality, and treatment requirements are understood to allow reconsideration of current adopted policies constraining municipal use. The table only lists the potable offset portion of the recycled water supply projections, and only assumes the supply for Area A as discussed in the recycled water section.

Table 4-10. Current and Projected Supplies (DWR Table 16)

	Annual Volume, acre-feet					
Source	**2010 (Actual)**	**2015**	**2020**	**2025**	**2030**	**2035**
SCWA	6,993	13,400	13,400	13,400	13,400	13,400
Supplier Produced Groundwater	1,007	0	0	0	0	0
Transfers In	0	0	0	0	0	0
Exchanges In	0	0	0	0	0	0
Recycled Water (potable offset only)	0	670	670	670	670	670
Desalinated Water	0	0	0	0	0	0
Total:	8,000	14,070	14,070	14,070	14,070	14,070

Notes: Recycled water supply beyond Area A assumed to be 0 AF, pending future SCWA supply availability. Only potable offset use is shown, actual use will be greater due to agricultural use of secondary effluent. 2010 Groundwater use implemented to reduce short-term rate impacts to customers.

The SCWA supply was restricted approximately from 2001 to 2008 due to SCWA financial decisions. Beginning in 2001, SCWA and the Contractors executed the

Memorandum of Understanding Regarding Water Transmission System Capacity Allocation During Temporary Impairment that allocated a maximum of 17.1 mgd average day maximum month to the City of Petaluma. Impairment restrictions have ended and WR&C does not include any similar restrictions in future supply reliability planning.

SCWA's supply is subject to reductions in Decision 1610 based on Lake Sonoma volume. Lake Sonoma has a total volume of 381,000 AF and a supply pool of up to 212,000 AF. When the total volume is less than 100,000 AF, the SCWA diversion is subject to up to 30 percent reduction during discrete time periods through the year. Using the water type years as listed in Table 4-11, the SCWA supply has never been subject to this reduction. With up to three years of supply stored in Lake Sonoma, the system is relatively resistant to impacts from one to four years of dry hydrology. SCWA provided a draft of its UWMP water supply reliability. SCWA assumes that the supply during portions of the year will be restricted by D1610 in a single-year dry-year event, but not a multi dry-year event. However, the SCWA analysis states that conservative modeling assumptions were used that likely overestimate the drawdown of Lake Sonoma during the single dry year modeling period. With the D1610 restrictions never reached historically, and until more definitive understanding of dry year supply and potential cutback conditions, WR&C projects its single dry-year supply to be its contract value of 13,400 AF.

Table 4-11 lists the projected supply reliability for surface, groundwater, and recycled water. Groundwater is projected at zero as WR&C is not relying on groundwater as a constant, regular supply. However, if WR&C does need to utilize groundwater during an emergency situation it is assumed the current groundwater production capacity will not be reduced. It is assumed there are no dry-year impacts to the recycled water supply and it is well below the current WRF production capacity. Table 4-12 lists the historic reliability of the water supplies. The recycled water volume listed is only the projected potable offset volume as discussed in Section 4.5.

Table 4-11. Basis of Water Year Data (DWR Table 27)

Water Year Type	Base Year(s)
Average Water Year	1962
Singly Dry-Water Year	1977
Multiple Dry-Water Years	1990-1992

Source: City of Petaluma 2005 UWMP

Table 4-12. Supply Reliability – Historic Conditions (DWR Table 28)

			Multiple Dry-Water Years, acre-feet			
Source	**Average Water Year, acre-feet**	**Single Dry-Water Year, acre-feet**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Surface	13,400	13,400	13,400	13,400	13,400	13,400
Groundwater	0	0	0	0	0	0
Recycled	670	670	670	670	670	670
Percent of Average Water Year:	100	100	100	100	100	100

Table 4-13 lists the potential factors that could result in reduction or inconsistent reliability of supplies. Potential factors for the SCWA surface water supply are discussed in Section 4.1. Groundwater may be impacted by water quality issues or reduced yield due to drought. As WR&C is not projecting normal groundwater use, Table 4-13 does not indicate a quantification of impacts. There are no projected impacts to the Utility's recycled water supply.

Table 4-13. Factors Resulting in Inconsistency of Supply (DWR Table 29)

Source	Limitation Quantification	Legal	Environmental	Water Quality	Climatic
Surface	Varies, see Section 4.1	X	X	--	X
Groundwater	--	--	--	X	X
Recycled	None	--	--	--	--

Table 4-14 lists the projected impacts to supply due to water quality issues. The only projected impacts are to the groundwater supply where the Utility has experienced some water quality issues as discussed in Section 4.2. However, as WR&C is not projecting using groundwater supply as a normal supply, there are no impacts to the supply quantity. There are no projected impacts to the City's recycled water supply, though future regulations or other issues may impact reliability.

Table 4-14. Current and Projected Water Quality Supply Impacts (DWR Table 30)

		Potential Impact to Supply Total, acre-feet					
Source	**Quality Issue**	**2010 (actual)**	**2015**	**2020**	**2025**	**2030**	**2035**
Surface	None	0	0	0	0	0	0
Groundwater	arsenic, iron, manganese, nitrate	0	0	0	0	0	0
Recycled	None	0	0	0	0	0	0

WR&C projects no impacts to supply reliability in the next three years as summarized in Table 4-15. Recycled water is listed as 0 AF as the tertiary system is not expected to be placed on line until after 2013.

Table 4-15. Supply Reliability (DWR Table 31)

		Multiple Dry-Water Years, acre-feet		
Source	**Average Water Year, acre-feet**	**2011**	**2012**	**2013**
Surface	13,400	13,400	13,400	13,400
Groundwater	0	0	0	0
Recycled	0	0	0	0
Percent of Average Water Year:	100	100	100	100

5 Conservation and Demand Management

WR&C maintains an active conservation program. The City is a member of the California Urban Water Conservation Council (CUWCC) and reports progress through the CUWCC's annual reporting process. However, WR&C's efforts go well beyond the standard CUWCC MOU. Extensive planning efforts were conducted in conjunction with the Water Supply and Demand Analysis Report (2006) and the Water Conservation Plan (2008) and resulted in additional programs being added to the conservation program. These efforts led to the current conservation and demand management program as presented in this section.

This 2010 UWMP Guidebook provides a list of required Demand Management Measures (DMM). The DMM list is equivalent to the CUWCC BMP list. This section lists each required DMM per the Guidebook, as well as the additional programs implemented by WR&C. Table 5-1 compares the 14 DMM program measures to the Utility's programs to identify which program provides the services in the counterpart DMM.

Table 5-1. Petaluma BMP versus DMM Comparison

UWMP DMM	City of Petaluma BMP
A. Residential Water Surveys	P1. Indoor Residential Surveys P2. Outdoor Residential Surveys
B. Residential Plumbing Retrofit	P3. Plumbing Retrofit
C. System Leak Detection and Repair	Implemented through operations and maintenance
D. Metering with Commodity Rates all New Connections	Implemented through Finance
E. Large Landscape Programs	P4. Water Budgets for Large Irrigators
F. High-Efficiency Washing Machine Rebate	P6. High-Efficiency Washing Machine Rebate P7. High Efficiency Washing Machine Requirement
G. Public Information Program	P11. Public Information Program
H. School Education Program	Wholesaler provided program
I. CII Programs	P5. Commercial Water Audits
J. Wholesale Agency Programs	Not Applicable
K. Conservation Pricing	Implemented through Finance
L. Water Conservation Coordinator	Implemented through Water Resources Department
M. Water Waste Prohibition	Implemented in City Ordinance
N. Residential Ultra-Low-Flush Toilet Replacement	P10. City Replace and Install Toilets with HETs
	P8. High Efficiency Faucets and Showerheads Requirement
	P9. HET Requirement
	P12. Smart Irrigation Controller Rebates
	P13. Smart Irrigation Controller with Rain Sensor Requirements
	P14. Landscape and Irrigation Requirements
	P15. Plan Check
	P16. Increase Enforcement of Landscape Requirements
	P17. Residential Landscape Training Classes
	P18. Hotel Plumbing Retrofit
	P19. Sub-metering
	P20. Mulch Madness

5.1 DMM A – Residential Survey

WR&C covers this DMM with two Programs, P1 – Indoor Residential Surveys and P2 – Outdoor Residential Surveys. The Utility has offered residential surveys since 2002. The survey includes both P1 and P2, and currently consists of the following efforts:

- Check for water leaks in toilets, showers, and faucets.
- Meter reading instructions and use for leak checking.
- Measure showerhead and faucet flow rates.
- Check irrigation system and timers.
- Review or develop customer irrigation schedules.
- Measure turf versus non-turf area.
- Site survey report listing findings and recommendations.
- Information on other conservation programs.

P17 - Residential Landscape Training also provides services under this DMM. The program provides three types of training; low water use landscaping, irrigation systems, and water efficient plants and principles. Since beginning this program in 2008, the Water Utility has conducted 17 training classes with 1,210 participants.

Implementation. WR&C markets the program through its public outreach program. All residential customers are offered the survey. A database is kept of each customer receiving the audit along with other customer-specific information and notes. Customers whose meter is fitted with an automatic read device (AMR) and whose meter shows a potential leak are targeted for audits. Additionally, the top 1,000 water users are targeted for audits and sent letters. The AMR customers and top water users are offered a $10 gift certificate to a local coffee house if they sign up for an audit. The Utility plans to provide 810 single family and approximately 400 multi-family surveys per year for the next five years.

Evaluation. Customer data is kept in the billing database and is used to evaluate impacts of DMM on demands over time. WR&C annually updates its demand projections and DMM water savings estimates for all its conservation programs to evaluate overall program effectiveness. The Utility also monitors requests for surveys over the year and from year to year to identify customer trends and needs to improve the program.

5.2 DMM B – Residential Plumbing Retrofit

WR&C's P3 – Residential Survey covers this DMM. The Utility has offered plumbing retrofit kits since 2002. This program distributes low-flow showerheads, faucet aerators, and hose-end nozzles during the residential audits, at the WR&C, and at other public information events.

WR&C also maintains another program relating to residential plumbing efficiency. P8-High Efficiency Faucets and Showerheads, requires all new residential construction and remodels to install low-flow showerheads and faucet aerators. This program is enforced through the City's permit and building inspection services.

Implementation. WR&C markets the program through its public outreach program. A database is kept of each customer receiving retrofit kits along with other customer-specific information and notes. Customers with AMR meters whose meter shows a potential leak are targeted for audits. Additionally, the top 1,000 water users are targeted for audits and sent letters. The AMR customers and top water users are offered a $10 gift certificate to a local coffee house if they sign up for an audit. The Utility plans to distribute 210 retrofit kits per year for the next five years.

Evaluation. Customer data is kept in the billing database and is used to evaluate impacts of DMM on demands over time. WR&C also monitors requests for retrofit kits over the year and from year to year to identify customer trends and needs to improve the program.

The DMM requirement is to reach 75 percent saturation for all pre-1992 residential units. Since beginning the program, 11,807 kits have been distributed. The Utility estimates the program has reached an 81 percent saturation level. However, WR&C intends to continue the program for the next five years.

5.3 DMM C – Leak Detection and Report

The Operations and Maintenance staff of WR&C conduct the efforts for this DMM. Staff monitors production and sales records on a monthly basis to identify unaccounted for water. Annual reports are also developed with unaccounted for water compared to past years to trend and identify any potential issues. WR&C has been monitoring unaccounted for water for at least the last 20 years. The unaccounted for water (not including known non-revenue water) in 2010 was approximately 4.5 percent. WR&C operations and conservation staff maintain the annual water audit program per the AWWA Water Audit Model. WR&C adjusts its leak detection and repair activities based on real-time leak frequency, audit results, and field observations. Currently, staff repairs leaks as they are identified and monitor for specific leak patterns by location, material, pressure, and other parameters. WR&C also monitors and enforces registration of contractors accessing water from hydrants, requiring a meter be used for payment calculations.

5.4 DMM D – Metering with Commodity Rates

This DMM is essentially part of the City's basic water service requirements. All customers are metered and charged using volumetric rates. The City regularly evaluates its rates structures and costs to provide water and adjust the service fee and volumetric rates accordingly.

5.5 DMM E – Large Landscape Conservation Programs and Incentives

WR&C's P4 – Water Budget for Large Irrigators covers this DMM. The Utility offers water budgets to all its irrigation account and large irrigation customers. Since the program began in 2002, the Water Utility has developed 598 water budgets.

A site survey is conducted to develop the water budget. The site survey includes measurement of landscape areas and plant type, irrigation system test, and a catch can test on turf irrigation systems. The budget is developed in a report that includes other

recommendations based on the site survey and also sources for additional information. The customer's monthly irrigation budget is displayed on each bill with a comparison of actual to budgeted use. Historical ETo data is used to develop the budgets, and each budget is adjusted annually with the new ETo data.

WR&C also maintains five other programs related to landscape and large landscape customers. P12 - Smart Irrigation Controller Rebates program provides up to $1,100 for the purchase of a smart irrigation controller. A customer must have at least 500 square feet of irrigated turf to be eligible. This program began in 2008 and has distributed 160 rebates through 2010.

P13 - Smart Irrigation Controller with Rain Sensor requires smart controllers with a rain sensor shut off for all new irrigation systems. P14 – Landscape and Irrigation requires that all new landscape be designed according to water efficient principals. P15 – Plan Check requires all landscape renovation projects between 1,000 and 5,000 square feet to be submitted to the Utility for review and approval. P16 - Increase Enforcement of Landscape Requirements provides additional review and inspection landscape and irrigations system to ensure the Utility's requirements are followed. Programs P12-16 all work together to ensure that new and renovated landscapes are designed and constructed to use water efficiently.

Implementation. WR&C markets the water budget and smart controller programs through its public outreach program and targeted messaging through bill notices. The new and renovated landscape programs are identified through the City's building permit process. A database is kept of each customer receiving the irrigation survey and budget and smart controller rebate along with other customer-specific information and notes. All irrigators of landscapes with separate irrigation accounts receive a monthly irrigation water use budget as information on the water bill or separate mailing. All public and private irrigators of landscapes larger than one acre are eligible for free landscape water audits upon request. The top water users are targeted for audits and sent letters offering a $10 gift certificate to a local coffee house if they sign up for an audit. The Utility plans to develop 64 budgets per year and distribute approximately 45 smart controller rebates per year over the next five years. WR&C will continue to implement these programs, changing focus to water budget management once all of its irrigation customers have been assigned budgets.

Evaluation. Customer water use versus the proposed water budget is kept in the billing database and is used to evaluate impacts of DMM on demands over time. The Utility reviews each budget versus actual demands to identify customers for additional service.

5.6 DMM F – High-Efficiency Washing Machine Rebate

WR&C's P6 – High-Efficiency Washing Machine Rebate covers this DMM. The rebate is offered to residential and commercial customers. Since starting this program in 2002, the Utility has distributed 4,143 rebates to residential customers and 117 to commercial customers.

WR&C also maintains another program relating to high-efficiency washing machines. P7- High-Efficiency Washing Machine requires all new residential, commercial, and public building projects to offer to install high-efficiency washing machines if a washing machine is provided by the developer. This program is enforced through the City's permit and building inspection services.

Implementation. WR&C markets the rebate program through its public outreach program. A database is kept of each customer receiving rebates along with other customer-specific information and notes. The Utility plans to distribute 575 rebates per year for the next five years. Beyond 2015, the rebates will be provided to pre-qualified customers replacing high water using clothes washers.

Evaluation. Customer data is kept in the billing database and is used to evaluate impacts of DMM on demands over time.

5.7 DMM G – Public Information Program

WR&C's P11 – Public Information covers this DMM. The Utility has maintained a public outreach program since 2002 and currently provides an annual budget of approximately $75,000 to develop the conservation program and demand management messages for each program. WR&C uses all media to reach its customers, including print, radio, television, web site, PSA's, bill inserts, informational booths, demonstration gardens, movie theater ads, and others. Customer bills contain comparison of water usage to the previous year usage to provide the help the customer understand their water usage. The conservation demonstration gardens are located at the Ellis Creek Water Recycling Facility, City Hall, and Cavanaugh Recreation Center.

WR&C tracks outreach efforts and estimates the number of customers reached through each outreach effort. The Utility compares its individual program participation to its annual goals to estimate the effectiveness of its public information program. The program is modified through new messaging or using different media to reach the program implementation goals.

5.8 DMM H – School Education Program

The SCWA provides the majority of the efforts for this program through a regional water education program. WR&C supplements the SCWA efforts through special events and workshops for the local schools.

The Agency's Water Education Program is designed to help educators teach students the value of water as an important natural resources and to promote water conservation, and watershed stewardship. The program includes classroom instructional presentations, field study opportunities, teacher training and workshops, free curriculum materials aligned with the California State Frameworks, a lending library of videos, interactive models, and printed materials, production of a newsletter for teachers, and endorsement, participation, and financial sponsorship of events, assemblies, and workshops.

The Agency tracks student participation each year. The total number of students reached per year via classroom instruction varies between 1,300-2,000 students. All students in the Petaluma City Schools receive curriculum materials.

5.9 DMM I – Commercial, Industrial, and Institutional Conservation Programs

WR&C provides multiple programs to the commercial, industrial, and institutional customers. P5 – Commercial Water Audits provides surveys and audits to all the CII customers. The survey includes a review of all water using fixtures and devices and makes recommendations for efficiency improvements. Since starting the program in 2002, the Utility has completed 73 surveys/audits. SCWA will also conduct CII surveys, but only conducted one survey in 2010.

P18 – Hotel Retrofit program provides a free water audit to each hotel. Following the audit, rebates are offered for certain water efficient equipment such as air-cooled ice machines, steamers, washers, cooling towers, and spray rinse valves. The rebate value ranges from $160 to $25,000 depending on device. The program began in 2002 and has provided over $75,000 in rebates.

The P10 – Water Utility Installed HET program is available to both residential and institutional customers. The Utility will purchase and install an HET for customers with existing high-flow toilets. The program targets public facilities as a priority, with high water-using residential customers the second priority. The program began in 2008 and has provided 11 installations since that time.

Although many of the CII customers do not maintain specific landscape irrigation meters, all of the landscape programs are available to all CII customers. These programs are further detailed in DMM E.

Implementation. WR&C markets the CII programs through its public outreach program and targeted messaging through bill notices. Customers are evaluated on water use annually, with direct contact conducted for the high-water users. A database is kept of each customer receiving the survey or other programs along with other customer-specific information and notes. The Utility plans to conduct 18 CII surveys per year and distribute 20 CII rebates per year over the next five years.

Evaluation. Customer water use is kept in the billing database and is used to evaluate impacts of DMM on demands over time. Information from the customer surveys and customer comments are considered to identify customer trends and needs to improve the program.

5.10 DMM J – Wholesale Agency Programs

The City is not a wholesale water provider and this DMM is not applicable. The SCWA is required to provide assistance to its retailers under this DMM as presented in the SCWA UWMP. SCWA provides the following programs or assistance to the Water Utility:

- School Education Program
- Regional Marketing
- CII Surveys

5.11 DMM K – Conservation Pricing

WR&C customers have always been metered and charged on volumetric rates. Expense and revenue requirements are evaluated regularly and rates are adjusted to match requirements for cost recovery. WR&C's current water rate structure contains a monthly service charge and a tiered volumetric charge. There are four tiers for the residential customers and one tier for all other customers. The wastewater rate also has two components, a service charge and a volumetric charge based on the customer's winter water usage.

WR&C's current rate structure results in volumetric revenues totaling approximately 85 percent of total revenue, which is in full compliance with the DMM. The Utility intends to maintain this volumetric percentage in any modifications to its future rate structure.

5.12 DMM L – Conservation Coordinator

WR&C maintains a fulltime conservation coordinator. The position was established in 2006. The Utility also budgets for one full-time equivalent (FTE) to help implement the conservation program. The coordinator's duties include management and implementation of the programs, budgeting and cost tracking, conducting site visits or other audits, representing the program at public information events, customer demand tracking, and others. Additional staff is utilized to assist in site visits and audits, budgeting and planning, water demand analysis, public information events and campaigns, or other program implementation needs.

WR&C plans to continue to fund the conservation program staffing levels for one coordinator and one FTE position for the next five years.

5.13 DMM M – Water Waste Prohibition

The City adopted Water Conservation Regulations Ordinance No. 2316 in February 2009 as part of the City's Water Service Code 15.17. The ordinance prohibits such practices as non-recirculating fountains, deliberate waste of water, single-pass evaporative cooling towers, or other non-essential uses of water as defined in the Water Code 15.17. The ordinance gives the City the authority to disconnect service if water waste is not corrected. The City's Water Service Code 15.17, including the water waste prohibition sections, is provided in Appendix E.

5.14 DMM N – Residential Ultra-Low-Flush Toilet Replacement Program

P10 – Water Utility Provided HETs, is the WR&C's ULFT program. The program provides Utility-purchased and installed HET (1.28 gpd) toilets. The program is targeted toward high water users in the institutional and residential sector. The program began in

2007 and has installed over 937 HETs in residential accounts. Prior to the current program, the Utility operated an ULFT rebate program that resulted in 4,013 rebates for replacing older residential toilets.

Implementation. WR&C markets the HET replacement program through its public outreach program and targeted messaging through bill notices. Beyond 2015, the rebates will be provided to pre-qualified customers replacing toilets using more than 3.5 gpf. There is not a retrofit on resale ordinance. However, the Utility promotes its HET install program through the realtor group where the program information is provided to all homebuyers. A database is kept of each customer receiving a HET along with other customer-specific information and notes. The top water users are targeted for the rebate program and sent letters offering a $10 gift certificate to a local coffee house if they sign up for the program. The Utility plans to install 300 HETs per year over the next five years.

Evaluation. Customer data is kept in the billing database and is used to evaluate impacts of DMM on demands over time. Information from the customer installs and customer comments are considered to identify customer trends and needs to improve the program.

5.15 Other Conservation Programs

WR&C also implements other conservation programs not covered under the UWMP DMM requirements. The Utility implemented a new building requirement for all commercial and multi-family accounts that requires a sub-meter for each unit in the new construction. This will provide to the Utility important demand and water use information. The information can then be used to modify and improve the conservation efforts to offer customers programs that to those that will benefit the most.

WR&C also offers a mulch program called Mulch Madness that provides free mulch, plants, and irrigation supplies to any customer willing to mulch over existing turf areas. In 2010 183 program participants converted 224,720 square feet of turf into low water use gardens that has removed lawn or irrigated areas from irrigation. The program is designed to offer a low-cost landscape alternative for those customers that want to remove their lawns without the higher cost of re-landscaping.

6 Demand to Supply and Contingency Planning

Projected demands are compared to projected supplies in this section. The City maintains a water shortage contingency plan to address instances when supplies are reduced. The Water Shortage Contingency Plan (Appendix E) covers both short-term emergency shortages and long-term supply reductions.

6.1 Demand to Supply Analysis

Normal year and dry year supply and demand scenarios are presented in Tables 6-1 through 6-3. As discussed in Section 4, the SCWA supply is not expected to be reduced during dry-year scenarios, and WR&C projects the full supply volume of 13,400 AF will be available. SWRCB Decision 1610 regarding SCWA's surface supplies does contain a clause for up to 30 percent reduction during critically dry scenarios. However, as described in Section 4.6, this scenario has never occurred. The Restructured Agreement for Water Supply contains provisions for supply reductions should the D1610 restrictions be implemented, but due to the variable nature of potential restriction amounts and length of time, reductions are not quantified.

WR&C does not anticipate any supply reductions except under extreme circumstances, such as catastrophic failure of SCWA's infrastructure. The Utility may decide to temporarily reduce its demands and supply delivery during certain future conditions to assist in addressing regional water supply and demand issues.

Table 6-1. Normal Year Supply to Demand (DWR Table 32)

	Volume, acre-feet				
	2015	**2020**	**2025**	**2030**	**2035**
Supply Total	13,400	13,400	13,400	13,400	13,400
Demand Total	10,627	10,112	10,580	11,047	11,515
Difference	2,773	3,288	2,820	2,353	1,885
Difference as % of Supply	21	25	21	18	14
Difference as % of Demand	26	33	27	21	16

Table 6-2. Single Dry-Year Supply to Demand (DWR Table 33)

	Volume, acre-feet				
	2015	**2020**	**2025**	**2030**	**2035**
Supply Total	13,400	13,400	13,400	13,400	13,400
Demand Total	10,627	10,112	10,580	11,047	11,515
Difference	2,773	3,288	2,820	2,353	1,885
Difference as % of Supply	21	25	21	18	14
Difference as % of Demand	26	33	27	21	16

Table 6-3. Multiple Dry-Year Supply to Demand (DWR Table 34)

		Volume, acre-feet				
		2015	**2020**	**2025**	**2030**	**2035**
First Year Supply	Supply Total	13,400	13,400	13,400	13,400	13,400
	Demand Total	10,627	10,112	10,580	11,047	11,515
	Difference	2,773	3,288	2,820	2,353	1,885
	Difference as % of Supply	21	25	21	18	14
	Difference as % of Demand	26	33	27	21	16
Second Year Supply	Supply Total	13,400	13,400	13,400	13,400	13,400
	Demand Total	10,627	10,112	10,580	11,047	11,515
	Difference	2,773	3,288	2,820	2,353	1,885
	Difference as % of Supply	21	25	21	18	14
	Difference as % of Demand	26	33	27	21	16
Third Year Supply	Supply Total	13,400	13,400	13,400	13,400	13,400
	Demand Total	10,627	10,112	10,580	11,047	11,515
	Difference	2,773	3,288	2,820	2,353	1,885
	Difference as % of Supply	21	25	21	18	14
	Difference as % of Demand	26	33	27	21	16

6.2 Water Shortage and Drought Contingency Plan

The City applies a four-stage rationing plan during declared water shortages. The rationing plan also applies to catastrophic loss of water. The rationing plan determines a consumption reduction of over 35 percent of the normal consumption depending on causes, severity, and anticipated duration of the water supply shortage. Table 6-4 summarizes the rationing plan stages of action. Requirements and actions are identified in each stage to achieve the necessary demand reduction. Actions for each stage and water shortage demand reduction measures are detailed in the Water Shortage Contingency Plan in Appendix E.

Table 6-4. Water Shortage Stages (DWR Table 35)

Stage	Water Supply Shortage Conditions	Percent Reduction Goal
Stage 1 – Minimal	Up to 15%	15%
Stage 2 – Moderate	15% - 25%	25%
Stage 3 – Severe	25% - 35%	35%
Stage 4 – Critical	35+%	35+%

Appendix A
2010 UWMP 60-day Notification

City of Petaluma
11 English Street • Petaluma, CA 94952

Sent via email

March 3, 2011

Veronica Ferguson
County Adminstrator
Sonoma County
575 Administration Drive, Suite 104A
Santa Rosa, CA 95403

Subject: City of Petaluma 2010 UWMP Notice

Ms. Ferguson,

The City of Petaluma is preparing its 2010 Urban Water Management Plan (UWMP). The UWMP is required to be submitted to the California Department of Water Resources every five years per Water Code Sections 10610-10657. The law requires a water agency to notify the county in which it serves water of its UWMP update. The City is updating its UWMP for 2010 and intends to present its findings at a public hearing in May. If you have any questions or comments regarding this process please contact me at (707) 778-4583.

Sincerely,

Remleh Scherzinger, P.E., Engineering Manager
Department of Water Resources and Conservation
202 North McDowell Blvd.
Petaluma, CA 94954

cc: Grant Davis, Sonoma County Water Agency

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Appendix B
2010 UWMP Public Hearing Notification

CERTIFICATION OF PUBLICATION IN
Petaluma Argus-Courier
(Published Thursdays)
IN THE
SUPERIOR COURT
OF THE
STATE OF CALIFORNIA
In and for the County of Sonoma

DECLARATION

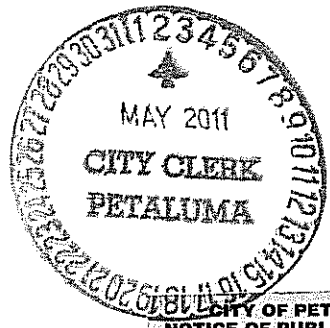
I am a citizen of the United States, over the age of eighteen years and a resident of said county and was at all said times the principal clerk of the printer and publisher of The Petaluma Argus-Courier, a newspaper of general circulation, published weekly in the City of Petaluma, in said County of Sonoma, State of California; that The Petaluma Argus-Courier is and was at all times herein mentioned, a newspaper of general circulation as that term is defined by Section 6000 of the Government Code; its status as such newspaper of general circulation having been established by Court Decree No. 35518 of the Superior Court of the State of California, in and for the County of Sonoma, Department No. I thereof; and as provided by said Section 6000, is published for the dissemination of local and telegraphic news and intelligence of a general character, having a bona fide subscription list of paying subscribers, and is not devoted to the interests, or published for the entertainment or instruction of a particular class, profession, trade, calling, race or denomination, or for the entertainment and instruction of such classes, professions, trades, callings, races or denominations, that at all said times said newspaper has been established, published in the said City of Petaluma, in said County and State at regular intervals for more than one year preceding the first publication of this notice herein mentioned; that said notice was set in type not smaller than nonpareil and was preceded with words printed in black face type not smaller than nonpareil, describing and expressing in general terms, the purport and character of the notice intended to be given; that Notice of Public Hearing: Adoption of the City of Petaluma's Urban Water Management Plan of which the annexed is printed copy, was published and printed in said newspaper at least two consecutive times commencing on the 21st day of April, 2011 and ending on the 28th day of April, 2011, to-wit April 21, 28, 2011.

I DECLARE UNDER PENALTY OF PERJURY that the foregoing is true and correct.

DATED this 28th day of April, 2011, at Petaluma, California.

Signed _____
Donna Taniguchi, Chief Clerk

2530103



CITY OF PETALUMA
NOTICE OF PUBLIC HEARING
ADOPTION OF THE CITY OF PETALUMA'S 2010 URBAN WATER MANAGEMENT PLAN

Notice is hereby given that a public hearing will be conducted by the City Council on Monday, May 16, 2011, at or after 7:00 p.m., in the City Council Chambers, City Hall, 11 English Street, Petaluma, CA. The purpose of the public hearing will be to receive public comment prior to formal adoption of the City of Petaluma's "2010 Urban Water Management Plan."

Copies of the "2010 Urban Water Management Plan" are available for public review at:

Office of the City Clerk, City of Petaluma, 11 English Street and the Department of Water Resources & Conservation, City of Petaluma, 202 N. McDowell Blvd., during normal business hours. The document is also available for review at the City of Petaluma's website.

If you cannot attend, you are encouraged to submit written comments and recommendations prior to the public hearing. Written comments may be mailed to: City Clerk, City of Petaluma, 11 English Street, Petaluma, CA 94952, or emailed to: cityclerk@ci.petaluma., or delivered to the City Clerk, City Hall, 11 English Street, Petaluma.

Claire Cooper, City Clerk

In accordance with the Americans with Disabilities Act, if you require special assistance to participate in this meeting, please contact the City Clerk's Office at (707) 778-4360 (voice) or (707) 778-4480 (TDD). Translators, American Sign Language interpreters, and/or assistive listening devices for individuals with hearing disabilities will be available upon request. A minimum of 48 hours is needed to ensure the availability of translation services. In consideration of those with multiple chemical sensitivities or other environmental illness, it is requested that you refrain from wearing scented products.

2530103 - Pub. Apr. 21, 28, 2011
2tl.

CERTIFICATION OF PUBLICATION IN
Petaluma Argus-Courier
(Published Thursdays)
IN THE
SUPERIOR COURT
OF THE
STATE OF CALIFORNIA
In and for the County of Sonoma

DECLARATION

I am a citizen of the United States, over the age of eighteen years and a resident of said county and was at all said times the principal clerk of the printer and publisher of The Petaluma Argus-Courier, a newspaper of general circulation, published weekly in the City of Petaluma, in said County of Sonoma, State of California; that The Petaluma Argus-Courier is and was at all times herein mentioned, a newspaper of general circulation as that term is defined by Section 6000 of the Government Code; its status as such newspaper of general circulation having been established by Court Decree No. 35518 of the Superior Court of the State of California, in and for the County of Sonoma, Department No. I thereof; and as provided by said Section 6000, is published for the dissemination of local and telegraphic news and intelligence of a general character, having a bona fide subscription list of paying subscribers, and is not devoted to the interests, or published for the entertainment or instruction of a particular class, profession, trade, calling, race or denomination, or for the entertainment and instruction of such classes, professions, trades, callings, races or denominations, that at all said times said newspaper has been established, published in the said City of Petaluma, in said County and State at regular intervals for more than one year preceding the first publication of this notice herein mentioned; that said notice was set in type not smaller than nonpareil and was preceded with words printed in black face type not smaller than nonpareil, describing and expressing in general terms, the purport and character of the notice intended to be given; that the Notice of Public Hearing: Adoption Of The City Of Petaluma's 2010 Urban Water Management Plan of which the annexed is printed copy, was published and printed in said newspaper at least one consecutive time commencing on the 12th day of May, 2011 and ending on the 12th day of May, 2011, to-wit May 12, 2011

I DECLARE UNDER PENALTY OF PERJURY that the foregoing is true and correct.

DATED this 12th day of May, 2011, at Petaluma, California.

Signed _____
Donna Taniguchi, Chief Clerk

#2533007

CITY OF PETALUMA
NOTICE OF PUBLIC HEARING
ADOPTION OF THE CITY OF PETALUMA'S 2010 URBAN WATER MANAGEMENT PLAN

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If you cannot attend, you are encouraged to submit written comments and recommendations prior to the public hearing. Written comments may be mailed to: City Clerk, City of Petaluma, 11 English Street, Petaluma, CA 94952, or emailed to: cityclerk@ci.petaluma., or delivered to the City Clerk, City Hall, 11 English Street, Petaluma.

Claire Cooper, City Clerk

In accordance with the Americans with Disabilities Act, if you require special assistance to participate in this meeting, please contact the City Clerk's Office at (707) 778-4360 (voice) or (707) 778-4480 (TDD). Translators, American Sign Language interpreters, and/or assistive listening devices for individuals with hearing disabilities will be available upon request. A minimum of 48 hours is needed to ensure the availability of translation services. In consideration of those with multiple chemical sensitivities or other environmental illness, it is requested that you refrain from wearing scented products.

2533007 - Pub. May 12, 2011 1ti.

Appendix C
2010 UWMP Adoption Resolution

Resolution No. 2011-093 N.C.S.
of the City of Petaluma, California

ADOPTING THE CITY OF PETALUMA 2010 URBAN WATER MANAGEMENT PLAN AND SBx7 7 20% BY 2020 WATER USE REDUCTION REQUIREMENTS

WHEREAS, the Urban Water Management Planning Act, Water Code Section 10610 et seq., (the Act) requires that every urban water supplier which provides 3,000 acre feet or more of water annually, or which directly or indirectly supplies water for municipal purposes to more than 3,000 customers, shall prepare an Urban Water Management Plan (UWMP), the primary objective of which is to plan for the conservation and efficient use of water; and,

WHEREAS, the Act also requires all urban water purveyors serving over 3,000 customers or over 3,000 acre-feet of water annually to develop an Urban Water Shortage Contingency Plan; and,

WHEREAS, the Water Conservation Act of 2009. Senate Bill SB x7-7, requires a 20% reduction in per capita water use by 2020; and,

WHEREAS, requirements of the Water Conservation Act of 2009 applicable to urban water suppliers may be incorporated into the Urban Water Management Plan; and,

WHEREAS, the Urban Water Management Plan must be adopted after public review and a public hearing by the City, and after adoption by the City Council must be filed with the California Department of Water Resources; and,

WHEREAS, the City of Petaluma has prepared the City of Petaluma 2010 Urban Water Management Plan, including SBx7-7 20% by 2020 water use reduction goals and the City of Petaluma Urban Water Shortage Contingency Plan 2010 per the requirements of the Urban Water Management Planning Act; and,

WHEREAS, the Petaluma City Council conducted a public hearing on the City of Petaluma 2010 Urban Water Management Plan, including the SBx7-7 20% by 2020 water use

reduction goals and the City of Petaluma Urban Water Shortage Contingency Plan 2010 on May 16, 2011; and,

WHEREAS, the City of Petaluma published a notice on the public hearing on April 21, 28, and May 12, 2011 in the *Petaluma Argus-Courier.*

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF PETALUMA AS FOLLOWS:

1. The above recitals are incorporated herein by reference.
2. The City of Petaluma 2010 Urban Water Management Plan, including the Water Conservation Act SBx7-7 20% by 2020 water use reduction goals, and the City of Petaluma Urban Water Shortage Contingency Plan 2010 are hereby adopted.
3. The Director of Water Resources and Conservation is hereby directed to submit the City of Petaluma 2010 Urban Water Management Plan to the California Department of Water Resources, Office of Water Use Efficiency, Post Office Box 942836, Sacramento, CA 94236-0001, within 30 days of adoption of the Plan.

Under the power and authority conferred upon this Council by the Charter of said City.

REFERENCE: I hereby certify the foregoing Resolution was introduced and adopted by the Council of the City of Petaluma at a Regular meeting on the 6th day of June, 2011, by the following vote:

Approved as to form:

City Attorney

AYES: Albertson, Barrett, Mayor Glass, Harris, Vice Mayor Healy, Kearney, Renée

NOES: None

ABSENT: None

ABSTAIN: None

ATTEST:

City Clerk

Mayor

Appendix D

20x2020 Regional Compliance Letter Agreement

Letter Agreement

Between and Among

Cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, Town of Windsor

And

North Marin Water District, Marin Municipal Water District

and Valley of the Moon Water District

For

Establishing a Regional Alliance to Comply with

SB x7-7 the Water Conservation Act of 2009

Recitals

A. The Water Conservation Act of 2009 (SB x7-7) set a goal of achieving a 20% reduction in statewide urban per capita water use by the year 2020 and requires urban water retailers to set a 2020 urban per capita water use target. SB x7-7 provides that urban water retailers may plan, comply and report on a regional basis, individual basis or both.

B. The Parties to this Letter Agreement (Cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, Town of Windsor and North Marin, Marin Municipal and Valley of the Moon Water Districts) are eligible to form a "Regional Alliance" pursuant to the *Department of Water Resources Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (DWR Methodologies) because the Parties receive water from a common water wholesale water supplier, the Sonoma County Water Agency (Agency). The Parties desire to establish a Regional Alliance for purposes of complying with SB x7-7.

C. The Parties and the Agency are signatories to the Sonoma-Marin Saving Water Partnership Memorandum of Understanding (S-MSWP MOU) that provides for the identification and implementation of regional water conservation programs and tasks as directed by the Water Advisory Committee (WAC). The S-MSWP MOU requires financial and reporting commitments for implementation of water conservation programs.

Agreement for Regional Alliance Target Setting and Reporting

1. Regional Alliance Formation and Target Setting

Pursuant to the DWR Methodologies, the Parties hereby form a Regional Alliance and agree to send a letter to the Department of Water Resources (DWR) prior to July 1, 2011 informing DWR that a Regional Alliance has been formed. The Parties agree that the Regional Alliance Target will be established using Option 1 (as Option 1 is described in the DWR Methodologies) and that each Party will include the Regional Alliance Target in its individual 2010 Urban Water Management Plan.

2. Regional Alliance Review

No later than December 31, 2015, the Parties agree to review and re-analyze the Regional Alliance and Regional Alliance Target as part of the preparation of the 2015 Urban Water Management Plan.

3. Regional Alliance Reporting

The Parties agree to prepare Regional Alliance Reports pursuant to the DWR Methodologies including but not limited to the following information: baseline gross water use and service area population, individual 2015 and 2020 water use targets for each Party and for the Regional Alliance, compliance year gross water use and service area population, and adjustments to gross water use in compliance year. The information will be provided by each Party and reported in the annual S-MSWP report in addition to the information required in the annual report, as outlined in the S-MSWP MOU.

4. Regional Water Supply Planning

The Parties agree to participate in discussions regarding regional water supply planning.

5. Regional Alliance Dissolution

The Parties agree that each Party can withdraw from the Regional Alliance at any time without penalty by giving written notice to all other Parties. If a Party withdraws from the Regional Alliance, the Parties agree that the Regional Target will be recalculated among remaining participating Parties as set forth in the DWR Methodologies and in Section 2 above.

6. Miscellaneous

This Letter Agreement shall be between and among those Parties that have executed this Letter Agreement by May 1, 2011. If all Parties have not executed this Letter Agreement by said date, the Parties who have executed this Letter Agreement by May 1, 2011, agree that the Regional Target will be recalculated among participating Parties as set forth in the DWR Methodologies and in Section 2 above.

7. Letter Agreement Authorization

This Letter Agreement may be signed in counterparts. By signing below, each signatory states that he or she is authorized to sign this Letter Agreement on behalf of the Party for which he or she is signing.

_____ _____

Date

Name: _____

City of Santa Rosa

_____ _____

Date

Name: _____

City of Rohnert Park

_____ _____

Date

Name: _____

City of Sonoma

_____ _____

Date

Name: _____

City of Cotati

Name: _____

City of Petaluma

Date

Name: _____

Town of Windsor

Date

Name: _____

North Marin Water District

Date

Name: _____

Marin Municipal Water District

Date

Name: _____

Valley of the Moon Water District

Appendix E

City of Petaluma Water Shortage Contingency Plan

City of Petaluma

Water Shortage Contingency Plan
2011

1 Introduction

This Water Shortage Contingency Plan describes actions at each stage of shortage. The Plan includes current water shortage emergency regulations that are located in Chapter 15, Section 18 of the City's Municipal Code and the Water Waste Ordinance that are documented in Section 15.12 of the Municipal Code. The current regulations are shown in Attachment 1. These regulations will be enforced in event of a water shortage. The Water Shortage Contingency Plan builds upon the regulations specified in the Municipal Code.

Petaluma's Urban Water Shortage Contingency Plan addresses demand reduction strategies for the Petaluma distribution system. The City's wholesaler, Sonoma County Water Agency, determines trigger points on the Russian River system, which in turn trigger Petaluma's program.

2 Water Supply

The City receives its main water supply through a contract with the Sonoma County Water Agency (SCWA). The SCWA aqueduct system delivers water from the Russian River and from groundwater wells in the Santa Rosa Plain to the City of Petaluma. The supply agreement with SCWA provides that SCWA is contractually obligated to deliver supplies, but is not obligated to provide supply in excess of 13,400 AFY and 21.8 million gallons per day.

3 Drought/Emergency Planning Actions

In addition to responding to drought conditions, the City's Water Shortage Contingency Plan can be used to respond to emergency conditions that interrupt water supplies to the City. Water supplies may be interrupted in the future due to water supply contamination, major transmission pipeline break, regional power outage, or a natural disaster such as an earthquake. In the event of an emergency, the Water Utility will respond as outlined in the current City of Petaluma's Water System Emergency Response Plan. Actions that the City would take if these emergencies occurred today are outlined below.

3.1 SCWA Supply Interruption

In the event that SCWA's Russian River supply becomes contaminated (i.e. due to a chemical spill or other environmental incident) or is unavailable due to natural disaster, it may be possible that no water would be available from SCWA for a period of time. In such a case, the City would need to rely on water from system storage facilities and emergency wells. The City will first determine existing storage supply, secure the Kastania Storage Tanks, evaluate the potential length of supply shut down, then determine which water shortage stage to declare. Once a water shortage stage is selected, the City will implement the appropriate measures as defined in the stage description.

3.2 Power Failure

If an area-wide electrical power failure were to occur within the City's water service area, many of the City's pumping facilities could potentially be impacted. Uninterruptible power supplies are used at the Central Control and at each of the field sites to power the SCADA system. The battery is designed for approximately eight hours, which should be sufficient time to return power or connect to a standby generator. Four portable generators are available and have been used in the past to support power outage response. SCWA's facilities may also be vulnerable to power outages; most of the SCWA facilities which serve the City have backup power provisions.

3.3 Earthquake

Water system infrastructure, including pump stations, storage tanks, and pipelines, can be damaged during a strong earthquake. The City's facilities have been constructed in accordance with the applicable building codes to minimize potential damage during an earthquake. Major reconstruction of existing facilities must also be designed to meet the provisions of the Uniform Building Code for Seismic Zone 4. However, it is expected that some facilities may be damaged as the result of a strong earthquake. The City has multiple storage facilities and looped distribution pipelines, to allow potentially damaged portions of the City's system to be quickly isolated and repaired.

4 Water Shortage Stages

Demand reduction strategies will be employed at all stages of a water shortage emergency. This section describes each stage and anticipated demand reductions. The City may prioritize certain uses during a shortage stage such as health and safety uses, commercial or industrial needs, permanent or heritage landscape irrigation, or others.

Stage	Supply Shortage	Demand Reduction Goal	Program Type
Stage 1 – Minimal	Up to 15%	15%	Voluntary
Stage 2 – Moderate	15% - 25%	25%	Mandatory
Stage 3 – Severe	25% - 35%	35%	Mandatory
Stage 4 – Critical	35+%	35+%	Mandatory

4.1 Stage 1 – Minimal

Stage 1 is designed to achieve demand reductions up to 15 percent. The stage relies mainly on voluntary actions by the customer to reduce demand. A public information campaign will be developed and implemented to message customers.

<u>Stage mandates</u>

- Hose-end shut-off nozzles required on all garden and utility hoses.
- Water served in restaurants on request only
- Pavement wash down only allowed for health and safety purposes.

Stage Actions

1. Adopt resolution requesting voluntary water conservation of 15 percent. Resolution to prohibit water waste and to reduce all non-essential water use per Water Waste Ordinance.

2. Initiate public information campaign:
   - Prepare and disseminate educational brochures, bill inserts, etc.
   - Disseminate technical information to specific customer types.
   - Set up public information booths urging water conservation and showing ways the public can save water.
   - Coordinate media outreach program; issue news releases to the media.
   - Explain other stages and forecast future reduction needs.
   - Encourage early AM/late PM irrigation.

3. Run customer demand analysis reports to identify high or abnormal water demand accounts. Develop and implement customer demand reduction plan as necessary for identified accounts.

4. Stage 1 Customer Demand Reduction Plan. May include voluntary or mandatory conservation BMPS, development and assignment of water budget, or other efforts as considered necessary or recommended by the Water Utility staff.

4.2 Stage 2 – Moderate

Stage 2 is designed to achieve demand reductions up to 25 percent. Demand reductions are mandatory, but other than the Stage Mandates, the customer is expected to reduce demands through methods that best fit their situation. The City will track customer demands and implement mandatory measures for customers that do not reduce demands.

Stage Mandates

- All prohibitions established in previous stage.
- Irrigation limited to the hours of 7:00 pm to 8:00 am.
- Operating ornamental fountains prohibited.
- Filling new swimming pools prohibited.

Stage Actions

1. Adopt resolution for Stage 2 requirements.

2. Update public information campaign for Stage 2 requirements and intensify outreach efforts.
   - Develop description of Stage 2 requirements, options for compliance, and potential fines.
   - Prepare and disseminate educational brochures, bill inserts, etc.
   - Disseminate technical information to specific customer types.
   - Set up public information booths urging water conservation and showing ways the public can save water.

3. Customer allowed to meet demand reduction requirements two ways:
   1. Achieve required percent reduction from last year's usage of same billing period.
   2. Meet water budget as assigned by City.

4. Run customer demand analysis reports to identify customers not meeting required percent reduction from last year's same billing period. Identify and select customers for further action. Develop and implement customer demand reduction plan as necessary for identified accounts.

5. Customer Demand Reduction Plan
   a. Offer and/or provide as requested, conservation program BMPs and customized water budgets.
   b. Provide information describing water shortage emergency fines.
   c. If customer can demonstrate a modified water need from previous year, City will provide a water budget.

7. The City will identify certain customer accounts for inclusion in the Customer Demand Reduction Plan, and issue warning notices and assess fines as described in Water Shortage Emergency Warnings and Fees. Certain customers may not be included in the Customer Demand Reduction Plan due to water demand priority or other factors.

8. Customer may appeal assigned water budget or warnings and fees to the Department Director. Findings and conclusions of said Director are final.

4.3 Stage 3 – Severe

Stage 3 is designed to achieve demand reductions up to 35 percent. Demand reductions are mandatory, but other than the Stage Mandates, the customer is expected to reduce demands through methods that best fit their situation. The City will track customer demands and implement mandatory measures for customers that do not reduce demands.

<u>Stage Mandates</u>

- All prohibitions established in previous stage.
- No water using landscape installation.
- Operating ornamental fountains prohibited.
- Filling or topping off all swimming pools prohibited, except for public facilities

<u>Stage Actions</u>

1. Adopt resolution for Stage 3 requirements.

2. Update public information campaign for Stage 3 requirements and intensify outreach efforts.
   - Develop description of Stage 3 requirements, options for compliance, and potential fines.
   - Public message to strongly encourage discontinuing landscape irrigation.
   - Prepare and disseminate educational brochures, bill inserts, etc.

- Disseminate technical information to specific customer types.
- Set up public information booths urging water conservation and showing ways the public can save water.

3. Customer allowed to meet demand reduction requirements two ways:
   1. Achieve required percent reduction from last year's usage of same billing period.
   2. Meet water budget as assigned by City.

4. Run customer demand analysis reports to identify customers not meeting required percent reduction from last year's same billing period. Identify and select customers for further action. Develop and implement customer demand reduction plan as necessary for identified accounts.

5. Customer Demand Reduction Plan
   a. Offer and/or provide as requested, conservation program BMPs and customized water budgets.
   b. Provide information describing water shortage emergency fines.
   c. If customer can demonstrate a modified water need from previous year, City will provide a water budget.

7. The City will identify certain customer accounts for inclusion in the Customer Demand Reduction Plan, and issue warning notices and assess fines as described in Water Shortage Emergency Warnings and Fees. Certain customers may not be included in the Customer Demand Reduction Plan due to water demand priority or other factors.

8. Customer may appeal assigned water budget or warnings and fees to the Department Director. Findings and conclusions of said Director are final.

4.4 Stage 4 – Critical

Stage 4 is designed to achieve demand reductions over 35 percent. Demand reductions are mandatory. The City will track customer demands and implement mandatory measures for customers that do not reduce demands.

Stage Mandates

- All prohibitions established in previous stage.
- No residential and commercial landscape irrigation allowed. Variance available for mature trees or food gardens, but customer must request and be granted variance prior to irrigation use. City may modify this to eliminate all irrigation depending on shortage condition.
- Public irrigation use only allowed for playing fields and mature trees or shrubs. City may modify this to eliminate all irrigation depending on shortage condition.

Stage Actions

1. Adopt resolution for Stage 4 requirements.

2. Update public information campaign for Stage 4 requirements and intensify outreach efforts.
   - Develop description of Stage 4 requirements, options for compliance, and potential fines.
   - Prepare and disseminate educational brochures, bill inserts, etc.
   - Disseminate technical information to specific customer types.
   - Set up public information booths urging water conservation and showing ways the public can save water.

3. Customer allowed to meet demand reduction requirements two ways:
   1. Achieve required percent reduction from last year's usage of same billing period.
   2. Meet water budget as assigned by City.

4. Run customer demand analysis reports to identify customers not meeting required percent reduction from last year's same billing period. Identify and select customers for further action. Develop and implement customer demand reduction plan as necessary for identified accounts.

5. Customer Demand Reduction Plan
   a. Offer and/or provide as requested, conservation program BMPs and customized water budgets.
   b. Provide information describing water shortage emergency fines.
   c. If customer can demonstrate a modified water need from previous year, City will provide a water budget.

7. The City will identify certain customer accounts for inclusion in the Customer Demand Reduction Plan, and issue warning notices and assess fines as described in Water Shortage Emergency Warnings and Fees. Certain customers may not be included in the Customer Demand Reduction Plan due to water demand priority or other factors.

8. Customer may appeal assigned water budget or warnings and fees to the Department Director. Findings and conclusions of said Director are final.

4.5 Water Shortage Warnings and Fees

Water shortage emergency warnings and fees can be applied to customers who are not meeting the demand reduction requirement of the specific water shortage stage. The City will issue warning and fines as necessary according to the following process:

a. First notice – no fine. Customer given up to two months to meet demand reduction requirements.
b. Second notice – fine of $150.
c. Subsequent notices after second notice. Issued up to two months after previous notice. City may assign fine of $300 each notice or opt to install pressure reducing device in service connection or disconnect service.

Customer will be charged $250 for installation of pressure reducing service, and $250 for removal device. Device will not be removed until customer has paid all fines and outstanding account balances, and customer has been assigned a water budget.

Customer will be charged $60 for service disconnection and $60 for re-connection. Service will not be re-connected until customer has paid all fines and outstanding account balances, and customer has been assigned a water budget.

4.6 Impacts to Revenues

The City's rate structure is a combination of fixed connection fee and volumetric usage charge. The volumetric revenue from the 2010 rates structure is estimated at 85 percent of total revenue. Therefore, as higher demand reductions are required in the stages, the volumetric revenue will also decrease. The City intends to address the reduced revenues through a combination of water shortage surcharges and use of reserves. However, this analysis is better addressed in the City's ongoing rate study and setting process. The next proposed rate plan will include analysis and development of alternatives to meet short-term and long-term water shortage revenue reductions.

DRAFT Water Shortage Emergency Resolution

RESOLUTION OF THE PETALUMA CITY COUNCIL DECLARING A WATER SHORTAGE EMERGENCY.

WHEREAS, the City of Petaluma is a City empowered to provide water service within certain boundaries; and

WHEREAS, due to (current condition – drought, contamination, etc.), water supply conditions indicates that a ___ percent reduction in demand is required dto ensure adequate supply in (insert date); and

WHEREAS, the Sonoma County Water Agency has reduced delivery to the City and all prime contractors by ____ percent; and

WHEREAS, the City of Petaluma has the authority and responsibility to adopt water demand reductions measures within its area of service; and

NOW, THEREFORE, IT IS RESOLVED that the City Council declares that under the current water shortage conditions a Water Shortage Emergency exists, within the area served by the City Water System.

DE IT FURTHER RESOLVED BY THE CITY COUNCIL OF THE CITY OF PETALUMA AS FOLLOWS:

1. The above recitals are true and correct and hereby declared to be finding of the City Council of the City of Petaluma.

2. The City Council directs the City Manager to implement a program of demand management as defined in the Petaluma Water Shortage Contingency Plan to realize City-wide water use reduction of ___ percent.

3. This resolution shall become effective immediately.

4. All portions of this Resolution are severable. Should any individual component of this Resolution be judged to be invalid and unenforceable by a body of competent jurisdiction, then the remaining Resolution portions shall be and continue in full force and effect, except as to those Resolution portions that have been adjudged invalid. The City Council of the City of Petaluma hereby declares that it would have adopted this Resolution and each section, subsection, clause, sentence, phrase, and other portion, hereof irrespective of the fact that one or more section, subsection, clause, sentence, phrase or other portion may be held invalid or unconstitutional.

Attachment 1
Petaluma City Municipal Code

Section 15.17: Water Conservation Regulations
Section 15.18: Water Shortage Emergency Regulations

EFFECTIVE DATE OF ORDINANCE
February 5, 2009

ORDINANCE NO. 2316 N.C.S.

Introduced by	Seconded by
Tiffany Renée	Teresa Barrett

AN ORDINANCE OF THE COUNCIL OF THE CITY OF PETALUMA REPEALING SECTIONS 15.12.071, 15.12.072, 15.12.073, 15.12.074, 15.12.075, 15, 12.076, 15.12.077 AND 15.12.078 OF CHAPTER 15.12 AND ADDING CHAPTER 15.17, WATER CONSERVATION REGULATIONS, TO THE PETALUMA MUNICIPAL CODE

WHEREAS, in 1928 the California Legislature mandated, under the State's constitution, that water will not be wasted but put to reasonable and beneficial uses setting the foundation for future water conservation regulations and programs; and,

WHEREAS, in 1983 the California Legislature passed the Urban Water Management Planning Act acknowledging the importance of water conservation and demand management as essential components of water planning; and,

WHEREAS, the City of Petaluma recognizes that water is an essential and limited resource; and,

WHEREAS, the City of Petaluma has historically undertaken a proactive water conservation program to improve the water use efficiency of its customers; and,

WHEREAS, the City of Petaluma jump-started its water conservation program in October 1999 by supplying 1000 ultra low flush residential toilets; and,

WHEREAS, as a signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California as coordinated by the California Urban Water Conservation Council ("CUWCC") since January 1, 2002, the City has continued to incorporate Best Management Practices ("BMP") for efficient water use; and,

WHEREAS, the City of Petaluma General Plan 2025 ("General Plan"), in its Water Demand and Supply Analysis, identifies water conservation as an essential source of water supply to meet potable water demand in the City through 2025; and,

WHEREAS, General Plan Policy 8-P-18, programs A, B, C, D and F call for the reduction of potable water demand through conservation, using BMP, implementation of the City's Water Drought Contingency Plan as needed and revising local ordinances as needed to encourage or require use of water-efficient landscaping and elimination of wasteful uses of water; and,

WHEREAS, the Environmental Impact Report ("EIR") prepared for the General Plan relied on increased water conservation to provide potable water offset as part of its evaluation that there would be an adequate water supply in the City to serve General Plan buildout; and,

WHEREAS, after public review and comment, and in full compliance with the California Environmental Quality Act ("CEQA"), on April 7, 2008, the City Council certified the General Plan EIR by adopting Resolution No. 2008-058 N.C.S.; and,

WHEREAS, on May 19, 2008, the City Council adopted Resolution No. 2008-084 N.C.S. making required findings of fact as to the environmental impacts of the General Plan, finding in part that because of the water conservation and water recycling programs contained in the General Plan, its environmental impact on water supply was less than significant under CEQA; and,

WHEREAS, after the completion of all required environmental review and other public process, the General Plan was adopted by City Council Resolution No. 2008-085 N.C.S. on May 19, 2008; and,

WHEREAS, on September 19, 2005, the City Council authorized the City Manager to execute a professional services agreement with Dodson Engineers for engineering services in support of preparation of a Water Conservation Plan; and,

WHEREAS, to develop the Water Conservation Plan, a project team was selected based on their unique skills and expertise in the field of water conservation; the project team consisted of City staff from the Department of Water Resources and Conservation, Department of Community Development, and Department of Parks and Recreation; landscape and irrigation experts, water conservation experts, financial consultant, and internationally acclaimed consultants such as Bill Maddaus (Maddaus Water Management) and Ned Orrett (Resource Performance Partners) and Dodson-Psomas Engineers with extensive knowledge of the City's demand and supply needs. Together, this team has over 180 years of experience in the area of water conservation; and,

WHEREAS, the Water Conservation Plan team met first on November 14, 2005 to begin the development of the Water Conservation Plan. The team met numerous times over the next two year period with the final team meeting occurring on January 25, 2007. Over this period the team analyzed 202 potential water conservation programs using a highly sophisticated computer model known as Least Cost Planning Decision Support System (DSS). Through this process, the team was able to develop a recommended program that met the water conservation plan goal of saving approximately 495 million gallons per year of potable water at buildout of the City's general plan (2025) by implementing 19 water conservation programs; and,

WHEREAS, on September 10, 2006 the City Council considered a draft Water Conservation Plan ("WCP") and provided Department of Water Resources and Conservation ("WRC") staff with direction for further modification; and,

WHEREAS, on January 28, 2008, the City Council adopted Resolution No. 2008-021 N.C.S., approving the WCP; and,

WHEREAS, adoption of a mandatory Water Conservation Ordinance with development standards, landscape water efficiency standards and water waste prohibitions will carry out General Plan policy, provide careful stewardship of water resources available to the City to

provide for orderly application of water conservation measures;, and will have the positive impact of creating substantial water savings; and,

WHEREAS, the City Council finds that adoption of this ordinance is exempt from CEQA pursuant to Section 15061(b(3) of the CEQA Guidelines (Title 14, Chapter 3 of the California Code of Regulations) because there is no possibility that the activity may have a significant effect on the environment under CEQA.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF PETALUMA AS FOLLOWS:

Section 1. Findings.

The foregoing recitals are true and adopted as findings of the City Council.

Section 2. Repeal of Sections 15.12.071, 15.12.072, 15.12.073, 15.12.074, 15.12.075, 15.12.076, 15.12.077 and 15.12.078.

Sections 15.12.071, 15.12.072, 15.12.073, 15.12.074, 15.12.075, 15.12.076, 15.12.077 and 15.12.078 of the Petaluma Municipal Code are hereby repealed in their entirety.

Section 3. Addition of Chapter 15.17 to Title 15.

Chapter 15.17, Water Conservation Regulations, is hereby added to Title 15 of the Petaluma Municipal Code to read in full as follows:

Chapter 15.17 Water Conservation Regulations

15.17.010 Title and Purpose

This chapter shall be known as and may be cited as the "City of Petaluma Water Conservation Regulations Ordinance." The purpose of this ordinance is to promote the efficient use and reuse of water by all City of Petaluma water service customers by requiring that all new construction projects and existing customers use water as efficiently as possible and comply with new development standards, landscape water use efficiency standards and water waste prohibition regulations.

15.17.020 Definitions

Unless a provision in this Chapter specifies otherwise, the following terms and phrases, as used in these chapters, shall have the meanings hereinafter designated:

A. "Applicant" means the owner(s) of a property subject to compliance with this Ordinance or his or her authorized representative or agent.

B. "Authorized representative" or "Agent" – any person(s) with written authorization from the property owner to sign documents and bind the property owner to compliance with this Chapter.

C. "Check valve" means a valve installed in a lateral line or at individual sprinkler heads in an irrigation system that prevents water from draining out of the irrigation system after the system has been turned off.

D. "City" means the City of Petaluma. The City Council of Petaluma may designate the position(s) or person(s) to whom responsibilities and authority of the City are delegated and may from time to time modify such delegations. Absent any further specific delegation by the City Council, the authority and responsibility set forth in this chapter shall be delegated to the director of water resources and conservation, including his or her designee(s).

E. "Dwelling unit" means a room or group of internally connected rooms that have sleeping, cooking, eating and sanitation facilities, but not more than one kitchen, which constitutes an independent housekeeping unit, occupied or intended for one household on a long-term basis, or such other definition as may be subsequently adopted by the City as part of its zoning ordinance and/or development code.

F. "ET Controller" or "Smart Controller" means an irrigation system controller or timer that automatically adjusts irrigation run times and run days based on data received from local weather stations. ET stands for evapotranspiration which is the amount of water that has evaporated from the soil and has transpired through the plant.

G. "Head-to-head coverage" means coverage resulting from placement of irrigation sprinklers so that the water from one sprinkler throws all the way to adjacent sprinklers.

H. "Hardscaped area" means the inanimate elements of landscaping, especially any masonry work or woodwork, stone walls, concrete or brick patios, tile paths, wooden decks and wooden arbors.

I. "Hydrozone" means a group of plants that have the same or similar water use requirements.

J. "Irrigation season" means the time of year when irrigation first begins at a location and last occurs. The irrigation season in Petaluma is typically March/April through October/November.

K. "Irrigation lateral line" means any point in an irrigation valve circuit that is normally not under constant water pressure. This is normally any point downstream from the irrigation remote control valve or hose bib.

L. "Irrigation mainline" means any point in the irrigation system that is under constant water pressure. This is normally any point downstream of the water meter up to and including the irrigation remote control valve or hose bib.

M. "Master valve" means an irrigation remote control valve that is placed upstream of all other remote control valves and activates and deactivates in conjunction with each subsequent irrigation remote control valve on the irrigation system. The purpose of the master valve is to prevent water waste by acting as a separate automatic shutoff valve should any of the subsequent irrigation remote control valves inadvertently stay open.

N. "Operating pressure" means the pressure in part of a plumbing or irrigation system, when the system is in normal operation.

O. "Overspray" means any water from an irrigation system that lands on an area not intended to be irrigated by the activated valve circuit.

P. "Precipitation rates" means the amount of water applied by an irrigation emission device measured in inches per hour.

Q. "Reference evapotranspiration" means the evapotranspiration, or amount of water that evaporates from the soil and transpires through plant material, that occurs from a standardized "reference" crop such as clipped grass or alfalfa.

R. "Reverse osmosis" means a process by which a solvent such as water is purified of solutes by being forced through a semipermeable membrane through which the solvent, but not the solutes, may pass.

S. "Runoff" means any water from an irrigation system that escapes from an irrigated area onto an area not intended to be irrigated by an activated irrigation valve circuit due to the excessive application of water.

T. "State" means the state of California.

U. "Static water pressure" means the water pressure of a plumbing or irrigation system while the system is not in operation or while no water is moving through the system.

V. "Irrigation valve circuit" means a group of sprinklers that are all turned on and off by the same irrigation valve.

W. "Water factor" means the quotient of the total weighted per-cycle water consumption divided by the capacity of the clothes washer. The lower the value, the more water efficient the clothes washer is.

X. "Water Feature" means any decorative water fountain, pond or other device intended to use water for aesthetic purposes that uses an automatic pump to circulate water.

Y. "Wetted diameter" means the area that is wetted by a single sprinkler device and by a series of overlapping sprinkler devices.

15.17.030 - Development Standards

The development standards established in this section apply to all new commercial, industrial, institutional, agricultural, single-family and multi-family residential construction, including tenant improvements or a change in use requiring any City entitlement or permit for existing commercial, industrial and institutional accounts. The development standards are intended to ensure that all installed water using fixtures, appliances, irrigation systems, and any other water using devices apply water as efficiently as possible.

15.17.030.10 Indoor Water Use Development Standards-New Single Family Residential Construction

Any water using device installed in any new development shall meet the standards of the California Plumbing Code (Part 5, Title 24, California Code of Regulations), and the following:

15.17.030.20 Standards for New Single-Family Residential Construction

1. Water closets must be an approved High Efficiency Toilet (HET) as designated on the City's list of qualifying HET's.

2. Shower heads must not use more than 2 gallons per minute. Where more than one showerhead exits in a shower unit, each showerhead must be plumbed so that each showerhead can be turned on and off independently from each other.

3. Any clothes washing machine provided with the residence must have a water factor of 6 or lower.

4. Lavatory and/or bar faucets must not exceed 1.5 gallons per minute.

5. Kitchen and/or utility sink faucets must not exceed 2.2 gallons per minute.

6. All Dishwashers must have the EPA's Energy Star label.

15.17.030.30 Standards for New Multi-Family Residential Dwellings

1. Water closets must be an approved High Efficiency Toilet (HET) as designated on the City's list of qualifying HET's.

2. Shower heads must not use more than 2 gallons per minute. Where more than one showerhead exits in a shower unit, each showerhead must be plumbed so that each showerhead can be turned on and off independently from each other.

3. Any clothes washing machine installed on the premises must have a water factor of 6 or lower.

4. Lavatory and/or bar faucets must not exceed 1.5 gallons per minute.

5. Kitchen and/or utility sink faucets must not exceed 2.2 gallons per minute.

6. All Dishwashers must have the EPA's Energy Star label.

7. Each dwelling unit must be separately metered or sub-metered.

15.17.030.40 Standards for New Commercial, Industrial, or Institutional (CII) Accounts and Tenant Improvements or Change of Use Requiring Any City Entitlement or Permit for Existing CII Accounts

1. Water closets and/or urinals must be an approved High Efficiency Toilet (HET) as designated on the City's list of qualifying CII HET's.

2. Shower heads must not use more than 2 gallons per minute. Where more than one showerhead exits in a shower unit, each showerhead must be plumbed so that each showerhead can be turned on and off independently from each other.

3. Commercial clothes washing machines shall have a water factor of 4.5 or lower.

4. Lavatory faucets must be self-closing and not exceed 1.5 gallons per minute. All faucets must be equipped with an aeration device.

5. Kitchen and/or utility sink faucets must not exceed 2.2 gallons per minute. All faucets must be equipped with an aeration device.

6. Dishwashers must have the EPA's Energy Star and/or Water Sense designation and must recycle the final rinse into the next wash cycle.

7. Pre-rinse hand-held dish-rinsing wands must not exceed 1.6 gpm and must utilize positive shut-off valves.

8. Cooling Towers (see Section 15.48.070 of this code, Sewer Use and Source Control Regulations).

9. Ice makers must be air-cooled.

10. Any other water using apparatus not mentioned above must use or reuse water as efficiently as possible and must be approved by the City prior to installation.

15.17.040 Standards for New or Renovated Vehicle Wash Facilities.

A. Vehicle wash facilities using conveyorized, touchless, and / or rollover in-bay technology shall reuse a minimum of fifty percent of water from previous vehicle rinses in subsequent washes.

B. Vehicle wash facilities using reverse osmosis to produce water rinse with a lower mineral content shall incorporate the unused concentrate in subsequent vehicle washes.

C. Self-service spray wands shall emit no more than three (3) gallons of water per minute.

15.17.050 Landscape Water Use Efficiency Standards

15.17.050.10 Properties Excluded from Applicability

The landscape water use efficiency standards described herein do not apply to registered historical sites (if the landscape is a part of the historic designation), properties irrigating with private well water, properties irrigated with recycled water or for zoned agricultural cultivation. Owners of these excluded properties are encouraged to implement efficient landscape water use practices.

15.17.050.20 Landscape Water Use Efficiency Standards for all New Single Family Residential ("SFR") and Multi-Family ("MFR") Residential, Commercial, Industrial and Institutional (CII) Landscape Installations

This subsection applies to all new residential and CII landscape installation projects and to CII and MFR projects which propose renovation of 5,000 square feet or more of existing landscaping within one twelve month period.

A. Application Process

Prior to installation of the proposed landscape and/or irrigation project the applicant shall submit to the City a set of scaled landscape and irrigation plans which shall include but not be limited to:

a. A planting plan indicating: location and square footages of turf, high water use plants and low water use plants per water meter; existing plant names and locations; a plant legend indicating Latin and common names of new plants, and sizes and quantities of new plants; hardscaped areas and; swimming pools, spas and water features.

b. An irrigation plan shall be submitted where irrigation hardware other than drip irrigation will be installed. When only drip irrigation will be installed an irrigation plan is not required for submittal. A description of the drip irrigation components shall be sufficient. The description shall include: manufacturer, name and specifications of all drip irrigation components; gallons per hour (gph) per emission device; and number, type, and gph of emission devices per plant size. Where microspray emission devises will be used, the rated gph shall be noted and the area(s) being irrigated under microspray shall be described. A pressure reducing valve must be installed where the operating pressure will exceed the manufactures recommendation of any drip irrigation emission device.

   Where any non-drip irrigation hardware is used an irrigation plan shall be submitted indicating: type(s) and size(s) of irrigation pipe; location, quantity and type of irrigation emission device(s) with manufacturer name and rated specifications of gallons per minute (gpm) of each device; manufacturers recommended operating pressure in pounds per square inch (psi) and precipitation rates for each device; location and type of backflow prevention device and pressure reducing valve(s); valve type(s) and size(s); valve location(s); gallons per minute and valve circuit number for each valve circuit, and; manufacturer's name and type of automatic irrigation controller(s). When more than one water meter exists for a particular landscape, each meter shall be designated and labeled as M-1, M-2, M-3, etc and noted on the irrigation plan. The meter number must be labeled with each valve number when more than one meter exists.

c. A grading and drainage plan indicating site elevations.

B. Plan Review and Landscape Water Budget Assignment

The City, or its agent, will review the submitted set of plans to ensure compliance of the landscape and irrigation standards. For accounts with dedicated irrigation meters, the City will assign a landscape water budget to the project in order to monitor landscape water use and to help determine the amount of water that should be applied to the landscape. The landscape water budget will allocate a determined amount of water to be dedicated to the landscape. The water budget will act as a guide for customers to use to irrigate their landscape. It will also provide a benchmark for evaluating water use efficiency. Any multi-family residential or CII customer who exceeds their water budget by 20% will be in violation of this ordinance and will be subject to enforcement. The landscape water use budget will be implemented upon final project approval.

C. Landscape Water Use Efficiency Standards

a. A dedicated irrigation meter(s) must be installed for all CII and multi-family residential projects. The dedicated irrigation meter shall separate all outdoor irrigation water use from all other water use.

b. Pressure regulation is required where site static water pressure will exceed 80 pounds per square inch (psi).

c. Backflow Prevention devices must be installed where required by state and local codes.

d. A master valve shall be installed after the backflow prevention device and before all irrigation system valves.

e. Soils in landscaped areas must be amended to promote optimal plant health and maximum water infiltration.

f. The use of California native plants is highly encouraged.

g. Plant water use classifications will be determined using the Water Use Classification of Landscape Species (WUCOLS) rating system.

h. Irrigation systems shall be designed and installed to maximize efficiency during operation. System design shall include but not be limited to:

1) All overhead spray irrigation systems other than drip irrigation applications shall be a brake rotary type and be a multi-stream, multi-trajectory rotating stream sprinkler with matched precipitation rates. The sprinkler shall produce and maintain a matched precipitation rate no greater than 0.6" per hour throughout the arc adjustment range and radius adjustment range, (up to 25% of radius reduction), when spaced at 50% of wetted diameter. For applications where the radius is designed to exceed thirty feet, water conserving rotor type sprinkler heads shall be permitted.

2) Individual hydrozones must be irrigated by separate valve circuits.

3) Irrigation systems must be designed and installed to prevent run off and overspray.

4) Check valves must be installed to prevent low head drainage.

5) Head-to-head coverage is required for all turf areas.

i. Turf and High Water Use Plant Restrictions:

1) Turf and high water use plants shall occupy no more than a combined 20% of the total irrigated landscaped area.

2) Turf areas shall not be less than 8 feet wide.

3) Turf is not permissible on slopes greater than 10%.

j. All automatic irrigation controllers must be labeled as ET Controllers or Smart Controllers or otherwise have the ability to automatically adjust irrigation start-times, run-times and/or run days based on local or site specific soil moisture levels, weather and/or reference evapotranspiration data. These controllers or devices must be labeled by the Irrigation Association (IA) as a Smart Water Applications Technology (SWAT) and must have passed the SWAT testing protocols by 100 percent in all testing parameters.

k. A minimum 3 inch layer of porous mulch is required for all irrigated areas other than turf, ground cover, or annual color areas.

l. Rain shut-off devices shall be installed on any controller not equipped to halt irrigation during and after rain as appropriate.

m. All water features must utilize recirculating water.

15.17.050.30 Landscape Water Use Efficiency Standards for *Renovated* Commercial, Industrial and Institutional (CII) and Multi Family Residential (MFR) Landscape Projects

A. Applicability

This section applies to all CII and MFR landscape renovation projects. Renovated landscape construction shall be defined as any landscape project considered for installation where more than 1,000 square feet and up to 5,000 square feet of the existing landscaping will be renovated. CII/MFR landscape renovation projects where more than 5,000 square feet of existing landscaping proposed for renovation within a twelve month period must comply with the standards established in Section 15.17.050.20.

B. Application Process

1. CII/MFR Landscape Renovation Project Description Form

Prior to the demolition and installation of the proposed landscape renovation project, the applicant shall submit to the City the CII/MFR Renovation Project Description form describing the renovation project including square footages of existing landscaping to be renovated and square footages of new landscaping to be installed.

The City, or its agent, will review the submitted form to ensure compliance of the below listed standards. Once the form is reviewed and approved, the City will submit to the applicant an authorization to proceed with the landscape and/or irrigation renovation project.

C. Landscape Water Use Efficiency Standards

a. All landscape and/or irrigation systems shall be installed so as not to violate the City's Water Waste Policy.

1) The City encourages the installation of a dedicated irrigation meter(s) or sub-meter during the renovation process.

b. The use of California native plants is highly encouraged.

c. Irrigation systems shall be designed and installed to ensure the efficient use of water during operation. System design shall include but not be limited to:

    1) All overhead spray irrigation systems other than drip irrigation applications shall be a brake rotary type and be a multi-stream, multi-trajectory rotating stream sprinkler with matched precipitation rates. The sprinkler shall produce and maintain a matched precipitation rate no greater than 0.6" per hour throughout the arc adjustment range and radius adjustment range, (up to 25% of radius reduction), when spaced at 50% of wetted diameter. Operating pressure of each sprinkler head shall be at the manufacturer's recommendation for optimal performance. For applications where the radius is designed to exceed thirty feet, water conserving rotor type sprinkler heads shall be permitted.

    2) Individual hydrozones must be irrigated by separate valve circuits.

    3) Irrigation systems must be designed to prevent run off and overspray.

    4) Check valves must be installed to prevent low head drainage.

    5) Head-to-head coverage is required for all turf areas.

d. Turf and High Water Use Plant Restrictions:

    1) Turf and high water use plants shall occupy no more than a combined 20% of the total renovated landscaped area.

    2) Turf areas shall not be less than 8 feet wide.

    3) Turf is not permissible on slopes greater than 10%.

e. All automatic irrigation controllers must be labeled as ET Controllers or Smart Controllers or otherwise have the ability to automatically adjust irrigation start-times, run-times and/or run days based on local or site specific moisture levels, weather and/or reference evapotranspiration data. These controllers or devices must be labeled by the Irrigation Association (IA) as a Smart Water Applications Technology (SWAT) and must have passed the SWAT testing protocols by 100 percent in all testing parameters.

f. Rain shut-off devices shall be installed on any controller not equipped to halt irrigation during and after rain as appropriate.

g. A minimum 3 inch layer of porous mulch is required for all irrigated areas other than turf, ground cover, or annual color areas.

h. All water features must utilize recirculating water.

15.17.050.40 Landscape Water Use Efficiency Standards for *New and/or Renovated* Parks/Playgrounds, Golf Courses, School Grounds, Cemeteries and Sports Fields.

A. Applicability and Landscape Water Use Efficiency Standards

The standards established in Sections 15.17.50.20 or 15.17.50.30 apply with the following exceptions:

a. Turf area limits will be waived for parks, playgrounds, golf courses, sports fields and school grounds if it is demonstrated by the applicant to the City's Department of Water Resources and Conservation that the new/renovated turf area is designed for recreational purposes.

b. Renovated cemeteries must demonstrate that new turf or renovated turf will be used for foot traffic or vehicular traffic for cemetery plot access.

15.17.060 Water Budgets for New and Existing Dedicated Irrigation Accounts

The City shall provide any account with a dedicated irrigation meter(s) a landscape water budget. The water budget will be calculated by the City or its agent by measuring the total irrigated landscaped area and the plant type(s) that exist per water meter. Any account assigned a water budget may not exceed the water budget for that billing period by more than 20% during that billing period. Accounts that exceed their water budget by more than 20% will be notified by the City. The City will work with the property owner or its authorized representative to ensure corrective actions are taken. Exceeding an account's water budget by more than 20% more than two times in one twelve month period and/or failure to cooperate with the City in taking corrective action after notification by the City of specific action(s) to be taken shall constitute a violation of this chapter.

15.17.070 Water Waste Prohibition

The purpose this section is to promote water conservation and efficient use of potable water furnished by the City of Petaluma by eliminating nonessential water use and intentional or unintentional water waste when a reasonable alternative solution is available and by prohibiting the use of water equipment that is wasteful.

15.17.070.10 Nonessential Uses Defined and Prohibited.

No customer of the City shall use or permit the use of potable water from the City for residential, commercial, institutional, industrial, agricultural, or other purpose for the following nonessential uses:

1. The washing of sidewalks, walkways, driveways, parking lots and other hard-surfaced areas by direct hosing not equipped with a shutoff nozzle, except as may be necessary to properly dispose of flammable or other dangerous liquids or substances and/or to prevent or eliminate materials dangerous to the public health and safety;

2. The escape of water through breaks or leaks within the customers plumbing or private distribution system for any substantial period of time within which such break or leak should reasonably have been discovered and corrected. It shall be presumed that a period of one (1) hour to stop the flow of water from such break or leak after the consumer discovers such a break or leak or receives notice from the City and seventy-

two (72) hours to correct such break or leak after the consumer discovers such a break or leak or receives notice from the City, is a reasonable time period;

3. Irrigation in a manner or to the extent that allows runoff of water or over-spray of the areas being irrigated. Every customer is deemed to have their irrigation system under control at all times, to know the manner and extent of their water use and any runoff and overspray, and to employ available alternatives to apply irrigation water in an efficient manner;

4. Washing cars, boats, trailers, or other vehicles, equipment and machinery directly with a hose not equipped with a hose-end shutoff nozzle;

5. Using water for non-recycling water features;

6. Using water for single pass evaporative cooling systems for air conditioning in all connections installed after July 1, 2001, unless required for health or safety reasons;

7. Using water for new non-recirculating conveyor car wash systems; Self-service car wash spray wands shall emit no more than three gallons of water per minute;

8. Using water for new non-recirculating industrial clothes wash systems.

9. Dedicated irrigation accounts exceeding the allocated water budget by more than 20% in any billing period.

15.17.070.20 Pressure Regulation

A pressure-regulating valve shall be installed and maintained by the consumer if static service pressure at the meter exceeds 80 pounds per square inch. The pressure-regulating valve shall be located between the meter and the structure valve, and set at not more than 60 pounds per square inch when measured at the structure valve. This requirement may be waived if the consumer presents evidence satisfactory to the City that high pressure is necessary in the design and that no water will be wasted as a result of high-pressure operation.

15.17.070.30 Swimming Pool and Spa Covers

Covers are required for all outdoor swimming pools and spas.

15.17.070.40 Exempt Water Uses

All water use associated with the operation and maintenance of fire suppression equipment or employed by the City for water quality flushing and sanitation purposes shall be exempt from the provisions of this section. Use of water supplied by a private well or from properly authorized recycled water, gray water, or rainwater catchment system is also exempt.

15.17.80 Exceptions

Any customer of the City may make written application for an exception to the Water Conservation Regulations Ordinance. Said application shall describe in detail why applicant believes an exception is justified:

A. The Director of Water Resources and Conservation may grant exceptions for use of water otherwise prohibited by this ordinance if an exception is necessary to avoid an adverse impact on health, sanitation or safety of the applicant or the public, and/or to avoid undue hardship for the applicant or the public. Any exception granted shall not be broader than necessary, or of a duration longer than necessary to avoid the adverse effect on health, sanitation, fire protection or safety and/or to avoid the undue hardship.

B. The decision of the Director of Water Resources and Conservation may be appealed to the City Council by submitting a written appeal to the City Clerk within fifteen (15) calendar days of the date of the decision. Upon granting any appeal, the Council may impose any conditions it determines to be just and proper. Exceptions granted by the Council shall be prepared in writing, and the Council may require the exception be recorded at applicant's expense.

15.17.090 Applicability of Water Shortage Emergency Regulations.

In the event of conflict between the provisions this chapter and the provisions of Chapter 15.18 of this code, the provisions of Chapter 15.18 shall supersede the provisions of this chapter from such time as the City Council has determined and declared by resolution that a water shortage emergency exists pursuant to Chapter 15.18, as it may be subsequently amended, until such time as the declaration of emergency has been suspended by later resolution of the City Council.

15.17.100 Enforcement and Fees

A. Depending on the extent of the water waste, the City may, after written notification to customer and a reasonable time to correct the violation as solely determined by the City, take some or all of the following actions. Seventy-two hours from notice of the violation shall be considered a reasonable time for correction, absent unusual circumstances that lengthen or shorten the reasonable time for correction. Penalties, fees and charges noted below shall be established by resolution of the City:

1. Personal contact with the customer at the address of the water service. If personal contact is unsuccessful, written notice of the violation including a date that the violation is to be corrected may be left on the premises, with a copy of the notice sent by certified mail to the customer.

2. The City may install a flow-restricting device on the service line.

3. The City may levy a water waste fine to the customer.

4. The City may shut off water service, and the charge for same shall be billed to the customer. Except in cases of extreme emergency as solely determined by the City Manager, service shall not be reinstated until verified by the City that the violation has been corrected and all charges and fees have been paid.

B. Depending on the nature and extent of water waste and/or the condition creating water waste, the City may discontinue water services without notice, pursuant to Section 15.12.070, and/or discontinue water services pursuant to Section 15.12.080 of this code.

C. In addition to discontinuance of water services, any violation of this chapter is subject to enforcement as specified in Chapters 1.10 through 1.16 of this code.

Section 4. Repeal of Conflicting Provisions

All existing code provisions, ordinances and parts of ordinances in conflict with the provisions of this ordinance are repealed upon the effective date of this ordinance, except that provision of Chapter 15.18 of this code which conflict with the provisions of this ordinance may be implemented and enforced at any time when the City Council has determined and declared by resolution that a water shortage emergency exists pursuant to Chapter 15.18, as it may be subsequently amended.

Section 5. Severability

If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, the remainder of the ordinance, including the application of such part or provision to other persons or circumstances shall not be affected thereby and shall continue in full force and effect. To this end, provisions of this ordinance are severable. The City Council hereby declares that it would have passed each section, subsection, subdivision, paragraph, sentence, clause, or phrase hereof irrespective of the fact that any one or more sections, subsections, subdivisions, paragraphs, sentences, clauses, or phrases be held unconstitutional, invalid, or unenforceable.

Section 6. Effective Date

This ordinance shall become effective thirty (30) days after the date of its adoption by the Petaluma City Council.

Section 7. Publication

The City Clerk is hereby directed to post and/or publish this ordinance or a synopsis of it for the period and in the manner required by the City Charter.

INTRODUCED and ordered posted/published this 1st day of December, 2008.

ADOPTED this 5th day of January, 2009, by the following vote:

Ayes: Vice Mayor Barrett, Glass, Harris, Healy, Rabbitt, Renée, Mayor Torliatt

Noes: None

Abstain: None

Absent: None

Pamela Torliatt, Mayor

ATTEST:

APPROVED AS TO FORM:

Claire Cooper, City Clerk

Eric W. Danly, City Attorney

CHAPTER 15.18
WATER SHORTAGE EMERGENCY REGULATIONS

15.18.010 Purpose of provisions.

The city council has, by Resolution No. 7658 NCS, dated February 7, 1977, found and determined that the ordinary demands and requirements for water consumers of the city cannot be satisfied without depleting the water supply to the extent that there would be insufficient water for human consumption, sanitation, and fire protection and declared a water shortage emergency. This chapter is intended to prohibit any additional demands on the existing water supply, to prohibit all nonessential uses as defined herein, and to allocate, consistent with the city's ability to administer and enforce, the available water supply during the water shortage emergency to the end that sufficient water will be and remain available for human consumption, sanitation, and fire protection. (Ord. 1233 NCS §1, 1977: Ord. 1211 NCS §1, 1976.)

15.18.020 Definitions.

For the purpose of this chapter, the following terms, phrases, words, and their derivations shall have the meaning given in this section. The word "shall" is always mandatory and never directory.

A. "City" means the city of Petaluma.

B. "Customer" means the person using water supplied by the city.

C. "Director" means the director of water utility operations of the city, or his designated representative.

D. "Department" means the water department of the city.

E. "Hand-watering" means water supplied to a customer or person which is used for exterior water use only and is being conveyed through a hose connected to the customer's or person's interior piping system while such hose is hand-held.

F. "Irrigate" means to water land or landscaping of any kind, whether by channels, by flooding, by sprinkling, or any other means whatsoever.

G. "Person" means any person, firm, partnership, association, corporation, company, or organization of any kind.

H. "Wastewater" means effluent from the city water pollution control plant which has been treated to secondary treatment standards as defined by the Regional Water Quality Control Board.

I. "Water" means all water, except wastewater, supplied by the city unless expressly provided otherwise or required by the context.

(Ord. 1246 NCS §1, 1977: Ord. 1233 NCS §2, 1977: Ord. 1211 NCS §2, 1976.)

15.18.030 Prohibition on new water service facilities.

No new additional, further expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or other water service facilities of any kind shall be made, allowed, approved,

installed, or accepted by the city after February 14, 1977, except as expressly provided in this chapter. (Ord. 1233 NCS §3, 1977: Ord. 1211 NCS §3, 1976.)

15.18.040 Prohibition of nonessential water use.
It is unlawful for any person to use water for any nonessential use as defined in Sections 15.18.040 and 15.18.050. (Ord. 1233 NCS §4, 1977: Ord. 1211 NCS §4, 1976.)

15.18.050 Nonessential uses defined.
On and after March 1, 1977, the following uses of water are nonessential:

A. Use of water from public or private hydrants for any purpose other than fire fighting or such other uses as the director may approve;

B. Use of water through any meter when the consumer has been given notice by the director to repair one or more leaks and has failed to complete such repairs within five days of such notice;

C. Use of water by a carwash in excess of seventy percent of the prior water use for the period November 1, 1976, to February 14, 1977, as determined by the department from its records. Where no such records exist, prior water use shall be deemed to be the average water use of similar existing services for such period as shall be determined by the department from its records, except where the director has determined pursuant to this chapter that any such use is nonessential and written notice of such determination has been provided;

D. Use of water by a golf course to irrigate any portion of its grounds except those areas designated as tees and greens; except where the director has determined that any such use is nonessential and written notice of such determination has been provided;

E. Use of water to irrigate grass, lawns, ground cover, shrubbery, vegetable gardens, trees, or other outdoor vegetation, except:

1. Hand-watering and other irrigation in reasonable amounts on odd-numbered dates east of U.S. Highway 101, and on even-numbered dates west of said freeway, and throughout the city on the thirty-first of any month;

2. Nothing in subsection 1 above shall be deemed to supersede or render invalid any other section or subsection of this chapter,

F. Use of water for the construction of any structure, including such use in dust control, except for construction pursuant to a building permit issued on or before February 14, 1977. In no event shall water be used for dust control;

G. Use of water to wash any sidewalk, walkway, driveway, street, parking lot, tennis court, or other hard-surfaced area by hand-watering or by other direct use of water from faucets or other outlets;

H. Use of water to wash any motor vehicle, trailer, airplane, or boat by hand-watering or otherwise using water directly from a faucet or other outlet;

I. Use of water to fill or refill any swimming pool, except make-up water.

(Ord. 1258 NCS §1, 1977: Ord. 1256 NCS §1, 1977: Ord. 1246 NCS §2, 1977: Ord. 1245 NCS §1, 1977: Ord. 1244 NCS §1, 1977: Ord. 1233 NCS §5, 1977: Ord. 1211 NCS §5, 1976.)

15.18.060 Further nonessential uses defined.
In addition to the nonessential uses set forth in Section 15.18.050, the following additional uses are determined to be nonessential on and after August 1, 1977, or such other date as the council may determine by resolution:

A. Use of water in excess of the daily usage allotment hereinafter set forth:

Residential Units

For each permanent resident, fifty gallons per day;

B. For all other uses not expressly set forth in subsection A hereof:

Fifty percent of the average daily prior water use for the period November 1, 1976, through February 14, 1977, as determined by the department from its records. Where no such records exist, prior water use shall be deemed to be the average prior water use of similar existing services for such period as shall be determined by the department from its records;

C. Use of water to irrigate, the provisions of Section 15.18.050 above to the contrary notwithstanding;

D. Use of water for hand-watering;

E. Use of water to wash any sidewalk, walkway, driveway, street, parking lot, tennis court, or other hard-surfaced area or any motor vehicle, airplane, or boat.

(Ord. 1246 NCS §3, 1977: Ord. 1244 NCS §2, 1977: Ord. 1233 NCS §6, 1977: Ord. 1211 NCS §6, 1976.)

15.18.070 Number of permanent residents.
Each customer in whose name water is supplied to a residence shall, upon request of the director, advise him under penalty of perjury the number of permanent residents using water supplied to that residence. If such a residential customer shall fail to so advise the director, such residence shall be permitted the water allocation provided in this chapter for one permanent resident. (Ord. 1233 NCS §7, 1977: Ord. 1211 NCS §7, 1976.)

15.18.080 Tampering with water meters prohibited.
It is unlawful for any person to remove, replace, alter, damage, bypass, or otherwise tamper with any water meter or components thereof, including but not limited to the meter face, dials, or other water usage indicators, and any flow-restricting device installed thereon. (Ord. 1233 NCS §8, 1977: Ord. 1211 NCS §8, 1976.)

15.18.090 Draining swimming pools prohibited.
It shall be unlawful to drain any swimming pool. (Ord. 1233 NCS §9, 1977: Ord. 1211 NCS §9, 1976.)

15.18.100 Variances.
A. The director may:

1. Grant temporary variances for uses of water otherwise prohibited; or

2. Adjust temporarily any consumer's allotment if he finds and determines that due to unusual circumstances to fail to grant such a variance would cause an emergency condition affecting health, sanitation, or fire protection of the applicant or the public; further, he may grant such adjustment in the case of a mixed residential/nonresidential use if he finds that such adjustment is necessary to place an equivalent allotment burden on said applicant. The city council shall ratify, modify, or revoke any such variance or adjustment at its next scheduled meeting. Any such variance or adjustment ratified may be revoked at any time by the city council upon a finding and determination of changed conditions;

3. Grant variances for new or increased-in-size water connections for commercial or industrial construction where he finds that such variance will not materially impair the city's ability to provide water for human consumption, sanitation and fire protection or the builder thereof has provided a well or other alternative source of water as provided in Section 15.18.150.

No such variance or adjustment shall be retroactive or otherwise justify any violations of the ordinance codified in this chapter accruing prior to issuance of said temporary variance or adjustment.

An applicant for a variance under this subsection and the mayor or any councilman may apply for review of the director's decision by the entire city council if said application is made within five days from the date of the director's decision. The council shall hear the matter at its next regular meeting and shall ratify, modify or revoke the decision of the director, and provide such relief, consistent herewith, which is reasonable. The council's decision shall be final.

(Ord. 1258 NCS §2, 1977: Ord. 1233 NCS §10, 1977: Ord. 1211 NCS §11, 1976.)

15.18.110 Wasting water prohibited.
It is unlawful for any person or customer to cause or permit any water to run to waste in any gutter or otherwise at any time. (Ord. 1233 NCS §11, 1977: Ord. 1211 NCS §12, 1976.)

15.18.130 Purpose and intent — Statutory construction.
It is the purpose and intent of this chapter to prohibit an increase in the water demand on the city's available water supply, to eliminate all nonessential water usage, and to provide for allocation of existing water recourses to insure sufficient water for human consumption, sanitation, and fire protection. This chapter shall be liberally construed to effectuate such purpose and intent. (Ord. 1233 NCS §13, 1977.)

15.18.140 Replacement and repair of existing facilities.
Notwithstanding any other provisions of this chapter, no restriction or prohibition is imposed upon the repair or replacement of existing water service facilities in a manner which the director determines will not materially increase the consumption of water. (Ord. 1233 NCS §14, 1977.)

15.18.150 Alternative sources — Effect on water connections.
Notwithstanding any other provisions of this chapter, new additional or increased-in-size water connections may be permitted where the city council finds:

A. A reliable well or other source of water meeting state health requirements provided by the applicant will supply potable water in excess of that required for human consumption, sanitation, and fire protection, as determined by the director, for any development proposed by the applicant and

B. Such well or alternative source can be connected to the city's water supply system without endangering existing customers or the system itself; and

C. The owner of such well or alternative source has developed and conveyed to the city such well or other source and appurtenant easements and equipment as required to the city. The council shall be the sole judge as to the easements and equipment to be required.

(Ord. 1233 NCS §15, 1977.)

15.18.160 Additional exceptions — When water connection.
A. Notwithstanding any other provision of this chapter, new, additional, or increased-in-size water connections may be permitted for residential development where the city council finds either of the following:

1. Such residential development is made up of four or fewer residential units. The total number of residential units permitted under this exception shall not exceed fifty in calendar year 1977.

2. Such residential development is a subdivision of fifteen or fewer parcels, the final map for which has been submitted to the city by February 14, 1977.

B. For purposes of this section, "residential unit" means a single-family dwelling, apartment, or condominium unit. Any building permit issued for any residential unit hereunder shall be subject to a surcharge to be established by the city council by resolution.

(Ord. 1233 NCS §16, 1977.)

15.18.170 Ordinance controlling.
The provisions of the ordinance codified in this chapter shall prevail and control in the event of any inconsistency between this chapter and any other rule, regulation, ordinance, or code of the city. (Ord. 1233 NCS §17, 1977.)

15.18.180 Water service to be disconnected.

Water may be shut off and the meter removed by the department without notice whenever the director determines there has been a failure to comply with the provisions of this chapter, any other provisions of this code to the contrary notwithstanding. Charges for reconnection or restoration of service which has been terminated pursuant to this section shall be at the rates and on the conditions set by the city council by resolution. (Ord. 1233 NCS §18, 1977.)

15.18.190 Enforcement — Designated persons.

A. Each police officer and police service aide of the city shall, in connection with his duties imposed by law, diligently enforce the provisions of this chapter.

B. The director and all employees of the city's water utility operations, sewer utility operations, public works department, building inspectors, and fire department shall have the duty and are authorized to enforce the provisions of this chapter and shall have all the powers and authority permitted under California Penal Code Section 8736.5, including the power to issue written notice to appear.

(Ord. 1233 NCS §19, 1977.)

15.18.200 Director may prohibit irrigation and other uses.

Whenever the director determines that the water available to the city's water department is insufficient to permit any irrigation, watering, or sprinkling and that all water then available to said department should be used solely for human consumption, sanitation, and fire protection, he may order and direct that irrigation, watering, or sprinkling shall not be permitted by any person or customer. While such order is in effect, no person or customer shall irrigate, sprinkle, or water any shrubbery, trees, lawns, grass, ground covers, plants, vines, gardens, vegetables, flowers, or any other vegetation, or engage in such other use as the director may prohibit. Violations shall be punished as provided in Section 15.18.120.

The director shall use every reasonable means under the circumstances to advise customers that such order is in effect. (Ord. 1244 §3, 1977.)

15.18.210 Abatement of chapter.

Notwithstanding any other provisions of this chapter, the city council may by resolution suspend the effectiveness of this chapter, or any part thereof, for a fixed period or indefinitely, upon making a finding that the water supply available to the city is adequate to insure that the resulting increased usage will leave sufficient water available for human consumption, sanitation and fire protection (Ord. 1273 NCS §1, 1977.)

J. Crowley Group
Water Resources Planning and Policy