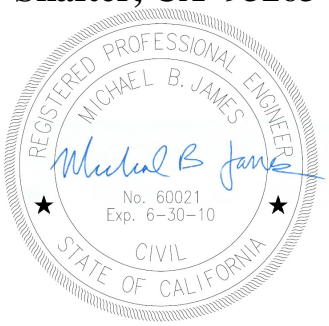
URBAN WATER MANAGEMENT PLAN UPDATE FOR 2010

City of Shafter
Public Works Department
336 Pacific Avenue
Shafter, CA 93263



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INTRODUCTION

This City of Shafter Urban Water Management Plan Update for 2010 has been prepared in accordance with the requirements of the Urban Water Management Planning Act, Water Code section 10610 et seq. (UWMP Act), and the Water Conservation Act of 2009, Water Code section 10608 et seq. (also referred to as SBX7-7). The UWMP Act requires every urban water supplier to update and adopt its Urban Water Management Plan (UWMP) at least once every five (5) years on or before December 31 in years ending in five and zero. Under the UWMP Act, an "urban water supplier" is a 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. Pursuant to SBX7-7 and SB 1478 (amending section 10608.20 of SBX7-7), the time for urban water suppliers to adopt their 2010 UWMPs was extended to July 2011.

Generally, an UWMP is a long-term planning tool that provides information regarding an urban water supplier's existing and projected sources of water supply, existing and projected water demands, water service reliability, water conservation and demand management measures, and water shortage contingency planning. An UWMP must consider a minimum 20-year planning horizon and account for normal, single-dry and multiple-dry year scenarios. Recently, new requirements were enacted under SBX7-7 that apply to 2010 UWMPs. Among other things, SBX7-7 establishes the legislative goal of achieving a 20 percent reduction in statewide urban per capita water use by 2020 and the interim goal of achieving a 15 percent reduction by 2015. In an effort to achieve these goals, SBX7-7 requires each "urban retail water supplier" to determine technical information such as existing baseline water consumption and future water use reduction targets, and to report that and other information in their 2010 and subsequent UWMPs. Under SBX7-7, an "urban retail water supplier" is defined as a water supplier that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes. For purposes of its 2010 UWMP, the City meets the definition of an urban retail water supplier. Accordingly, and as set forth herein, this 2010 Urban Water Management Plan has been prepared in accordance with the UWMP Act, SBX7-7, and the technical guidance documentation prepared and published by the California Department of Water Resources.

PUBLIC PARTICIPATION

The City of Shafter encourages public involvement and feedback with projects and issues relating to the City water system, including the preparation of this 2010 Urban Water Management Plan. Public involvement and support has enabled the City to make great strides towards more efficient and responsible urban water use. As further set forth herein, public participation has allowed the City to achieve extraordinary progress in the area of water conservation, including the following:

- Low flow fixture requirements for new construction.
- Use of commodity rates for monthly water service billing.
- Installation of meters on all new water services since early 1990s.
- Public outreaching on benefits of conserving water.

PLAN ADOPTION

The City of Shafter developed its Urban Water Management Plan during the spring of 2011. The plan was made available for public review and comment per the Urban Water Management Plan Act, Section 10642. Following a required public hearing, the Shafter City Council adopted Resolution #2168, City of Shafter Urban Water Management Plan, on August 16, 2011.

Copies of the Final 2010 Urban Water Management Plan were submitted to the State of California Department of Water Resources, the California State Library, and the County of Kern within 30 days of Council approval.

PLAN IMPLEMENTATION

The implementation of this plan will take effect following its adoption by the City Council. The implementation programs and schedules are outlined in the Demand Management Measures (DMMs) featured in this plan. The DMMs represent either a continuation or expansion of programs listed in the 2005 Urban Water Management Plan.

RESOURCE MAXIMIZATION & IMPORT MINIMIZATION PLAN

The City has incorporated water management tools to maximize water resources and is committed to integrating and expanding water conservation into future operations and planning for both the water and wastewater systems. These tools and plans are detailed in the Demand Management Measures section of this plan.

AGENCY COORDINATION

Table 1 - Agency Coordination

Coordinating Agencies	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt
Water Suppliers/Agencies						
Oildale Mutual Water Company					X	
Shafter-Wasco Irrigation District					X	
Semitropic Water Storage District					X	
North Kern Water Storage District					X	
Water Management Agencies						
Kern County Water Agency					X	
Relevant Public Agencies						
County of Kern Planning Dept.						X
County of Kern Clerk of Board						X
Other						
North of the River Sanitary District					X	
Minter Field Airport District					X	
General Public					X	

The City notified the County of Kern Planning Department Director and Clerk of Board of Supervisors at least 60 days prior to the public hearing on the plan as required by California Water Code Section 10621(b).

Along with other supporting documentation, the following are appended to this Plan for reference:

- Proof of publication for Notice of Public Hearing and Notice of Availability for this 2010 Urban Water Management Plan.
- Written comments and inquires received by regarding the draft plan.
- Adopted Resolution #2168, City of Shafter Urban Water Management Plan, dated August 16, 2011, which authorizes, among other things, the following:
  - ⇒ Plan provided to DWR, the State Library and the County of Kern no later than thirty (30) days after submitting the Plan to DWR.
  - ⇒ <u>Plan made available for public inspection at Shafter City Hall during normal business hours within 30 days of filing with DWR.</u>

SYSTEM DESCRIPTION

Supplier Service Area

The City is located in the heart of the San Joaquin Valley, approximately fifteen miles northwest of metropolitan Bakersfield and one-hundred miles north of downtown Los Angeles. It currently has a service population of approximately 18,200 which includes customers within its City limits plus unincorporated communities that have consolidated with the City's distribution system. Through the distribution system, approximately 5,000 acre-feet of water is delivered to an estimated 4,100 water service connections of which approximately 3,800 (90%) are for residential service.

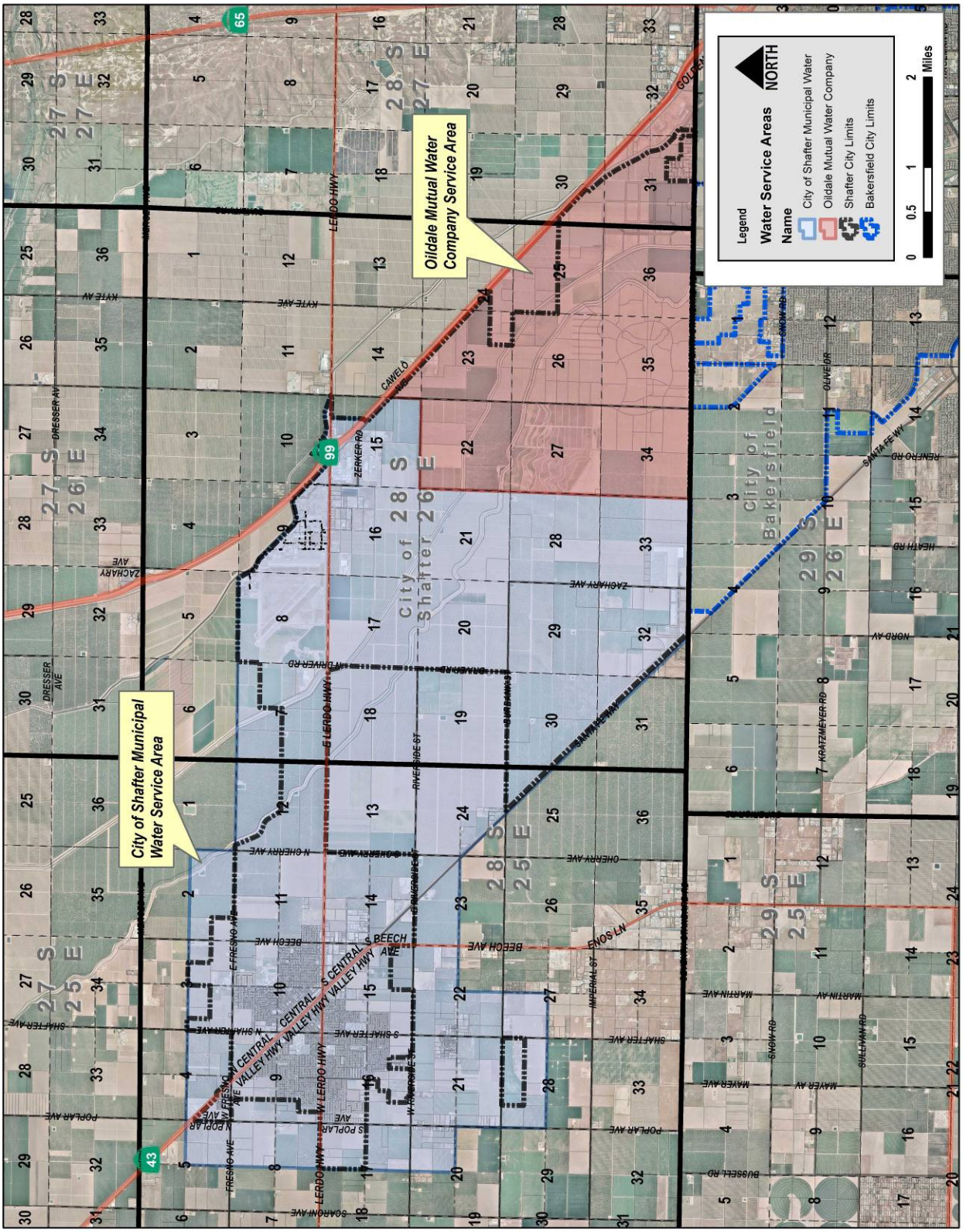
Based on U.S. Census population data for the years 2000 and 2010, the City's population grew at an annual average rate of approximately 2.5% which is expected to continue for the foreseeable future. In 2005, the City updated its General Plan and expanded its jurisdiction boundary to nearly 30 square miles in preparation for growth and expansions with its residential, commercial and industrial sectors. It is anticipated that there will be a build out period of at least 20 years for future service areas within the City. The City's service area population is further discussed below in connection with the calculation of its urban water use targets for purposes of SBX7-7.

City staff prepares and oversees the preparation of water system infrastructure improvement plans and monitors the construction of these projects with assistance from outside consultants. City staff provides for infrastructure expansion by taking a proactive role in the planning process.

As indicated above, urban water use within City limits and to certain unincorporated areas is currently provided by the City. However, a portion of newly-annexed territory in the southeast portion of the City, totaling to approximately 5,200 acres (eight square miles) (hereinafter referred to as "Southeast Shafter"), is planned to receive water service from Oildale Mutual Water Company (OMWC). It was projected in the City's 2005 Urban Water Management Plan that Southeast Shafter would have urban water demand by 2010 but the recent economic downturn has made development and urbanization timelines for this area less certain. OMWC's 2010 Urban Water Management also addresses Southeast Shafter and estimates urban water demand there by 2016. Because of OMWC's plan inclusion of the Southeast Shafter, the future water demands for Southeast Shafter are not provided and analyzed in the City's total projected water demands for purposes of this 2010 UWMP.

Figure 1 provides a geographical service area breakdown for the City and OMWC.

Figure 1 - Water Service Area Map



Climate

Shafter's climate is mostly sunny and moderate. Rainfall normally occurs between October and May with 77% of the precipitation received from November to March. The annual precipitation averages to approximately six inches. The average temperature from June through September is 80ºF. The average minimum in December and January is 38ºF. July is generally the hottest month, with daily maximums frequently exceeding 100ºF. See the following Table 2 for monthly climate data acquired for this plan.

Table 2 - Climate Data

	Typical Year												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Avg. ETo (in)[1]	1.24	2.24	3.72	5.70	7.44	8.10	8.68	7.75	5.70	4.03	2.10	1.24	57.94
Avg. Rainfall (in)[2]	1.40	1.17	0.79	0.76	0.17	0.00	0.01	0.01	0.08	0.35	0.40	0.66	5.80
Avg. Temp.(º F)[2]	56.6	63.2	68.8	73.7	84.2	91.8	97.8	95.8	90.7	79.2	65.6	58.8	-

Source: (1) CIMIS Data for State of California Eto Zone 15, 1999.
(2) Western Regional Climate Center, Bakersfield 5 NW 354 Station for the Years 1999 to 2007.

Table 2 - Climate Data

Service Population

It is assumed that the City of Shafter water system currently serves every City resident. In order to estimate a complete water service population, unincorporated communities being served must also be taken into account. Historical population data within City limits provided by the State of California Department plus the 2000 and 2010 U.S. Census are provided in Table 3. Over the past 20 years, the City's water system consolidated with several unincorporated community water systems. Reasons for the consolidations have mostly to do with the inability of small community water systems to meet water quality standards and fund daily operations.

City water service was extended to an unincorporated service area commonly referred to as "South Shafter" through two separate water distribution extension projects. The service area is comprised of multiple rural areas formerly served by community water systems including the Mexican Colony, Cherokee Strip, Smith's Corner, Thomas Lane and others. These consolidations took place with projects built in both 1997 and 2001. To date, South Shafter accounts for 417 connections which are mostly residential. Utilizing data compiled by the U.S. Department of Census for 2010 for the South Shafter census blocks served by the City suggests that 1,170 individuals with the 1997 project and additional 330 individuals with the 2001 project were added to the City's service population. The estimated total of 1,500 individuals divided by the current total of 417 service connections suggested a 3.6 capita per household average. Table 3 reflects the population adjustments to the City's service area based on the completion of each

individual project that added South Shafter connections. No growth was assumed because the City pipelines used to consolidate with unincorporated communities generally were not sized to subsidize new development or service area expansions.

In 2002, the City also had its distribution system extended to serve demands in the unincorporated area consisting of the North Shafter Farm Labor Camp located at 17213 Central Valley Highway. Although this facility has a reported capacity of 350 people, it has historically seen seasonal occupation. Therefore, it will not be considered with an everyday service population.

Service population adjustments used for this plan are consistent with service population adjustments allowed to develop a base daily per capita water use estimate which will be detailed further in this plan.

Table 3 - Historical Service Population

Year	City Population Data			Additional Capita For South Shafter	Total Service Population
	Dept. of Finance	Census	Population Used		
1998	11,227		11,227	*1,170*	12,397
1999	11,645		11,645	*1,170*	12,815
2000	11,895	12,736	11,895	*1,170*	13,065
2001	13,216		13,216	*1,170*	14,386
2002	13,895		13,895	*1,500*	15,395
2003	13,343		13,343	*1,500*	14,843
2004	13,692		13,692	*1,500*	15,192
2005	14,113		14,113	*1,500*	15,613
2006	14,501		14,501	*1,500*	16,001
2007	14,982		14,982	*1,500*	16,482
2008	15,609		15,609	*1,500*	17,109
2009	15,812		15,812	*1,500*	17,312
2010	16,208	16,988	16,988	*1,500*	18,488
Annual Growth (2000-2010)		***2.50%***			

Table 4 - Projected Service Populations

	2010*	2015	2020	2025	2030
Service Population	18,488	20,413	22,538	24,884	27,474
** See Table 3*					

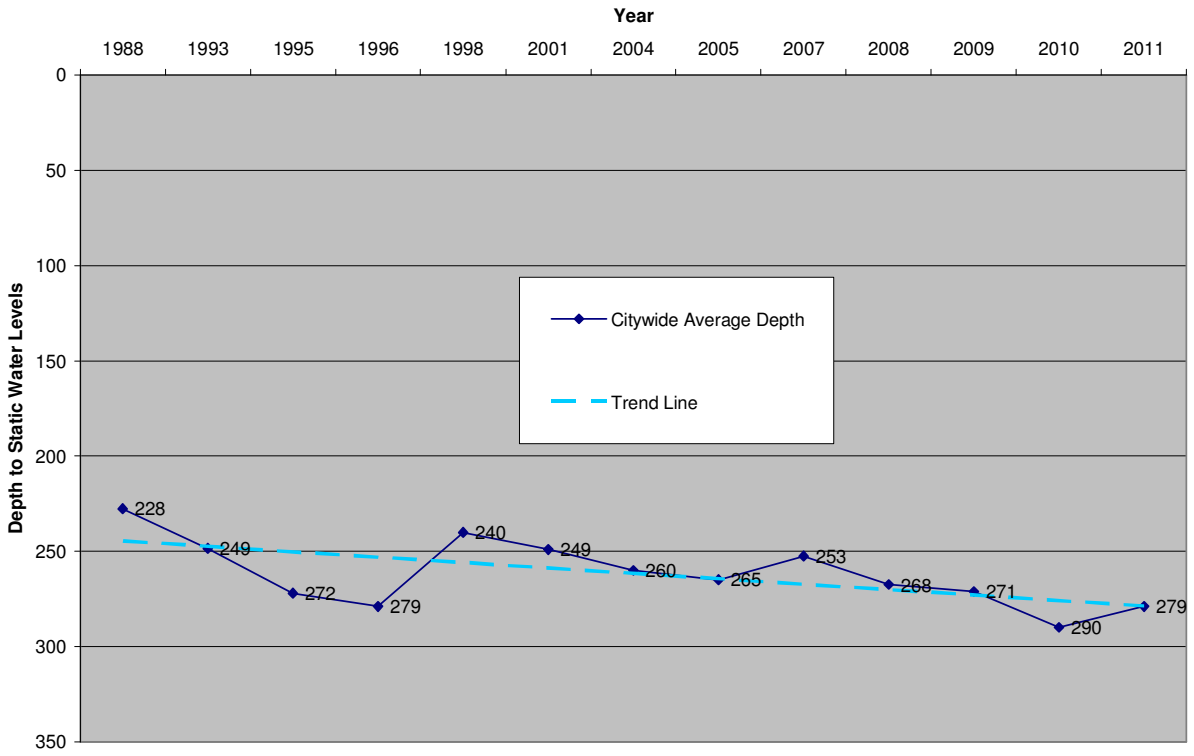
Table 4 assumes 2.5% annual growth to its service population which is an annual average rate calculated from 2000 and 2010 U.S. Census population data (see Table 3). This particular period experienced rapid development and economic booms along with recessions and downturns so it can likely serve as a model for multi-year overall growth for planning purposes.

Other Demographic Factors

Since 1987, California has experienced two periods of multi-year droughts. That coupled with less stable surface water supplies for urban and agricultural uses has resulted in documented declines in groundwater levels in Shafter and throughout the Central Valley of California.

Figure 2 provides a summary of average citywide static water levels over a period of almost 25 years.

Figure 2 - Static Groundwater Depth Levels



Since 2008, the City has had pumps lowered at most of its wells to respond to declines in its groundwater levels. The City anticipates that groundwater levels will stabilize at current levels but decline further which will require a continued policy of adjusting pumping depths for the foreseeable future.

SYSTEM DEMAND

Urban water supplier and purveyors are now required to provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

Methodologies

Among other things, SBX7-7 establishes the goal of achieving a 20 percent reduction in statewide urban per capita water use by 2020 and the interim goal of achieving a 15 percent reduction by 2015. In an effort to achieve those goals, SBX7-7 requires each urban retail water supplier to determine its baseline daily per capita water use in terms of gallons per capita per day (gpcd), and to establish future water use reduction targets to achieve lower gpcd values by 2015 and 2020. To assist urban retail water suppliers in preparing these and related calculations, SBX7-7 required DWR to develop technical methodologies and criteria for the consistent implementation of the new requirements, which retail suppliers are required to utilize in complying with SBX7-7. (Water Code § 10608.20(h).)

The final version of DWR's Methodologies were issued in a February 2011 document entitled Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (For the Consistent Implementation of the Water Conservation Act of 2009). A copy of the DWR Methodologies are included in DWR's March 2011 Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan. (Together, these DWR guidance documents are referred to herein as the DWR Guidebook.) The DWR Guidebook sets forth the following methodologies for preparing the calculations under SBX7-7:

Methodology 1: Gross Water Use
Methodology 2: Service Area Population
Methodology 3: Base Daily Per Capita Water Use
Methodology 4: Compliance Daily Per Capita Water Use
Methodology 5: Indoor Residential Use
Methodology 6: Landscaped Area Water Use
Methodology 7: Baseline Commercial, Industrial, and Institutional (CII) Water Use
Methodology 8: Criteria for Adjustments to Compliance Daily Per Capita Water Use
Methodology 9: Regional Compliance

As indicated above, the methodologies developed by DWR provide specific guidance to water suppliers on how to calculate baseline, target, and compliance-year water use. Each methodology defines how its calculations are to be used, with direct reference to the applicable section of the Water Code. Each methodology describes the calculations, data needed, and, where applicable, optional steps and alternative approaches that water suppliers may use depending on their specific circumstances. The methodologies for indoor residential water use; landscaped area water use; and baseline CII water use (Methodologies 5, 6, and 7) apply only to urban retail

water suppliers who use Method 2 (see Water Use Targets below) to set water use targets.

Baseline Water Use

Water suppliers must define a 10- or 15-year base (or baseline) period for water use that will be used to develop their target levels of per capita water use. The longer baseline period applies to a water supplier that met at least 10 percent of its 2008 measured retail water demand through recycled water. Because the City does not meet the criteria for using a longer baseline period, the 10-year baseline has been used for determining the City's target levels. Water suppliers must also calculate water use for a 5-year baseline period and use that value to determine a minimum required reduction in water use by 2020.

Definition of Base Daily Per Capita Water Use

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

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

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

Calculation of Base Daily Per Capita Water Use

Calculating Base Daily Per Capita Water Use entails four steps:

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

Calculating Base Daily Per Capita Water Use per Section 10608.20

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

- If recycled water made up less than 10 percent of 2008 retail water delivery, use a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.
- If recycled water made up 10 percent or more of 2008 retail water delivery, use a continuous 10- to 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010. As indicated above, this 15-year baseline period does not apply to the City.

Water Use Targets & Reduction Requirements

2020 & 2015 Targets

Under SBX7-7, urban retail water suppliers must set a 2020 water use target and a 2015 interim target using one of four methods specified in Water Coe section 10608.20(b), as follows:

- Method 1: Eighty percent of the water supplier's baseline per capita water use (20% reduction)
- Method 2: Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscaped area water use; and CII uses
- Method 3: Ninety-five percent of the applicable state hydrologic region target as stated
- in the State's April 30, 2009, draft 20x2020 Water Conservation Plan
- Method 4: An approach developed by DWR pursuant to SBX7-7.

As stated in the DWR Guidebook a water supplier may revise its Base Daily Per Capita Water Use after submitting its 2010 UWMP if better information becomes available. In that instance, the revisions may be included in the water supplier's 2015 or 2020 urban water management plan or in an amended plan, provided the supplier follows the process required for amendments to an UWMP. A water supplier may also change the method it uses to set its water use target and report it in a 2010 amended plan or in its 2015 urban water management plan. Urban water suppliers are not permitted to change target methods after they have submitted their 2015 UWMP.

Minimum Water Use Reduction Requirement per Section 10608.22

The following calculation is required only if the five-year baseline per capita water use per Section 10608.12(b)(3) is greater than 100 gpcd. The calculation is used to determine whether the water supplier's 2015 and 2020 per capita water use targets meet the legislation's minimum water use reduction requirement per Section 10608.22. Because the City's baseline per capita water use is higher than 100 gpcd, this calculation must be performed by purposes of SBX7-7. The calculation entails three steps:

1. Calculate Base Daily Per Capita Water Use using a continuous five-year period ending

no earlier than December 31, 2007, and no later than December 31, 2010.

2. Multiply the result from Step 1 by 0.95. The 2020 per capita water use target cannot exceed this value (unless the water supplier's five year baseline per capita water use is 100 gpcd or less). If the 2020 target is greater than this value, reduce the target to this value.
3. Set the 2015 target to the mid-point between the 10- or 15-year baseline per capita water use and the 2020 target determined in Step 2.

Table 5 - Base Daily Per Capita Water Use 10-Yr Range

				Per Capita Use (gpcd)		
Base Period Year		Distribution System Population	Daily system gross water use (gpd)	Annual daily per capita water use (gpcd)	2020 Target (20% Reduction)	2015 Target (10% Reduction)
Sequence Year	Calendar Year					
Year 1	1998	12,397	3,342,466	270		
Year 2	1999	12,815	3,767,123	294		
Year 3	2000	13,065	4,007,159	307		
Year 4	2001	14,386	4,052,826	282		
Year 5	2002	15,395	4,154,608	270		
Year 6	2003	14,843	4,358,540	294		
Year 7	2004	15,192	4,220,501	278		
Year 8	2005	15,613	4,185,416	268		
Year 9	2006	16,001	4,363,647	273		
Year 10	2007	16,482	4,258,781	258		
Base Daily Per Capita Water Use				***279***	***223***	***251***
Current Year	***2010***	***18,488***	***4,230,192***	***229***		

Table 6 - Base Daily Per Capita Water Use 5-Yr Rage

				Per Capita Use (gpcd)	
Base Period Year		Distribution System Population	Daily system gross water use (gpd)	Annual daily per capita water use	Max. Water Use Allowed (5% Reduction)
Sequence Year	Calendar Year				
Year 1	2003	14,843	4,358,540	294	
Year 2	2004	15,192	4,220,501	278	
Year 3	2005	15,613	4,185,416	268	
Year 4	2006	16,001	4,363,647	273	
Year 5	2007	16,482	4,258,781	258	
Base Daily Per Capita Water Use				***274***	***260***
Current Year	***2010***	***18,488***	***4,230,192***	***229***	

Summary and Conclusions

For purposes of this 2010 UWMP, the City has elected to use Method 1 under Water Code section 10608.20(b) for determining its urban water use targets. As shown in Table 5, the ten-year baseline period selected produces target base daily per capita water use for 2015 and 2020 of 251 and 223 gpcd, respectively. The five-year baseline period selected for purposes of Water Code sections 10608.12(b)(3) and 10608.22 (Table 6) produce a maximum 2020 per capita water use target of 260 gpcd. Because the City's 2020 urban water use target using Method 1 does not exceed this value, no further adjustment is required for the City's target. Reducing water use to meet the 2020 target will likely require the City to implement demand management measures further discussed in this plan.

SYSTEM SUPPLIES

Groundwater Basin and Management

The City of Shafter currently receives 100% of its water supply from an underground aquifer. This aquifer is within the boundaries of the Kern County Basin of the Tulare Lake Hydrologic Region, according to the California Department of Water Resources Bulletin 118-Update 2003. The Bulletin provides background on groundwater use and development which includes the following:[1]

- Basins underlie approximately 49% of the hydrologic region footprint.
- Groundwater use has been particularly important to this region, accounting for 41% of the region's water needs and 35% of the groundwater pumped throughout the State.
- Groundwater wells at the San Joaquin Valley floor are commonly drilled to 1,000-foot depths or deeper at the and typically yield between 300 and 2,000 gpm.
- The basin's groundwater level remained relatively unchanged from 1970 to 2000. The groundwater levels decreased fifteen feet (15') from 1970 through 1978, increased fifteen feet (15') from 1978 through 1988, and decreased eight feet (8') from 1988 through 1997. There specifically is noted in Bulletin 118 a decrease of twenty-five feet (25') in the Bakersfield area and about fifty feet (50') in the McFarland/Shafter area.
- Natural recharge of the basin is primarily from stream seepage along the eastern subbasin and the Kern River. Recharge of applied irrigation water, however, is the largest contributor.
- The larger developed areas of Fresno, Bakersfield, and Visalia have groundwater recharge programs to ensure that groundwater will continue to be a viable water supply in the future. Extensive groundwater recharge programs are also in place in the south valley where water districts have recharged several million acre-feet for future use and transfer through water banking programs.
- Some noteworthy groundwater management plans within the Kern County Subbasin, according to DWR's Groundwater Bulletin 118, are as follows:
    - ⇒ Recharge and in-lieu programs are operated by the City of Bakersfield and Kern County Water Agency.
    - ⇒ Shafter- Wasco ID approved AB 3030 management plan in 2007.
    - ⇒ West Kern Water District adopted a groundwater management plan.
    - ⇒ Kern Delta WD adopted a plan on October 15, 1996.
    - ⇒ Rosedale-Rio Bravo WSD's AB 3030 plan was adopted on March 11, 1997.
    - ⇒ Cawelo WD adopted an AB 3030 management plan in 1994.
    - ⇒ Semitropic Water Storage District adopted a groundwater management plan in September 2003.

[1] State of California Dept. of Water Resources, "Tulare Lake Hydrologic Region," Bulletin 118 – Update 2003 Report

Figure 3 - Tulare Lake Basin Location

Source: California's Groundwater - Bulletin 118, Update 2003

The Tulare Lake Groundwater Basin is not an adjudicated groundwater basin, as defined by the California Water Plan Update, Bulletin 160-98, Figure 3-28 on page 3-54 and Table 3-16 on page 3-55.

According to the State Department of Water Resources, no law requires that any of identified groundwater management be applied in a basin. Management is essentially implemented by local agencies or landowners that identify a specific groundwater problem. The extent of groundwater management in any basin or subbasin generally depends on water availability and demand. To date, the City has not adopted a groundwater management plan because it has not experienced groundwater supply issues but will continually reassess the need to prepare and adopt a plan.

The California Water Plan Update, Bulletin 160-98 page 3-50, Table 3-15, reports overdraft the for the Tulare Lake Region in 1995 at 820 thousand acre-feet (ac-ft) but further forecasts a decline in overdraft up to the year 2020[2]. This decline, even with a likely increase of urban water use, would be a result of an assumed decrease in agricultural water use.

As described further in this plan, the City uses wastewater effluent for agricultural irrigation on City-owned land plus City land owners help finance groundwater recharge programs and surface water rights. These efforts help to maintain and replenish the groundwater table through deep percolation and which generally reduces groundwater overdraft. The City's Demand Management Measures also help to reduce overdraft through urban water conservation.

Existing and Planned Sources

The City's water distribution is made of the following infrastructure:

- 7 Active Water Wells
- 4 Aboveground Water Storage Tanks With Booster Pumps
- 70 Miles of Water Distribution Lines

[2] State of California Dept. of Water Resources, "Tulare Lake Hydrologic Region," Bulletin 118 – Update 2003 Report

Table 7 - Active Well Profiles

	Depths		Perforations			Capacity
Well	Well	Pump	Top	Bottom	Total Length (ft)	(gpm)
6	720	380	512	712	200	600
7	700	440	500	700	200	1,000
8	700	480	500	700	200	1,500
11	800	460	500	800	300	1,100
12	800	360	500	800	300	1,700
14	800	360	500	800	300	2,100
17	860	490	545	635	90	2,000
			680	840	160	
					TOTAL	***10,000***

Currently the City's standing water level is approximately two-hundred-and-eighty feet (280').

The City's recorded water production from 2006 through 2010 along with projections through 2030 are presented in the following tables:

Table 8 - Groundwater Pumped 2006 – 2010

Basin name(s)	Metered or Unmetered	2006	2007	2008	2009	2010
Kern County Subbasin	Unmetered	1,424,956,000	1,416,203,960	1,555,477,208	1,372,061,380	1,395,030,820
Kern County Subbasin	Metered	167,775,000	138,251,000	158,087,300	119,896,000	124,675,600
Total groundwater pumped		***1,592,731,000***	***1,554,454,960***	***1,713,564,508***	***1,491,957,380***	***1,519,706,420***
Percent of total water supply		***100.0%***	***100.0%***	***100.0%***	***100.0%***	***100.0%***
Units: Gallons Per Year						

Table 9 - Volume of Projected Water to be Pumped

Basin name(s)	2015	2020	2025	2030	2035 - opt
Kern County Subbasin	1,641,061,785	1,734,140,568	1,684,713,216	1,859,923,391	TBD
Total groundwater pumped	***1,641,061,785***	***1,734,140,568***	***1,684,713,216***	***1,859,923,391***	***TBD***
Percent of total water supply	***100.00%***	***100.00%***	***100.00%***	***100.00%***	***TBD***
Units: Gallons Per Year					

Demands listed in Table 9 are detailed in Tables 12 – 14.

Water Use by User Type

Residential Sector

There are approximately 3,800 residential service connections currently on the City's water distribution system that account for approximately 80% of the water supplied. This estimate includes single family and multi-family dwellings both within the City limits and in outlying service areas.

Less than 300 residential accounts are metered for billing purposes currently but the City's meter retrofit program is funded through 2014 to install new meters on at least 200 services annually and convert affected customers to metered billing. The highest priority for these initial

installations will be customers with existing manual read meters which will be replaced with an automatic meter reading (AMR) standard to expedite meter reading process and minimize need to hire new staff. Grants, loans, rate increases or a combination of these options will be pursued to fund the costlier retrofit of 2,500 connections with no existing meter.

The City currently does not currently serve or anticipate serving Regional Housing Needs Assessment (RHNA) allocated Lower Income Housing Units.

This City estimates that this sector will be fully-metered by 2025.

Commercial Sector

Approximately 320 of the City's service connections are currently commercial customers and 15% of those accounts are billed for metered use. Typically annual growth is about two percent (2%) annually and which is primarily driven by the need for services by the increasing permanent population. This sector includes schools and offices.

The City estimates that this sector will be fully-metered by 2015.

Industrial Sector

There are approximately 40 connections and 60% of those accounts are billed for metered use. The City has a rapidly growing industrial sector that is primarily centered on light manufacturing, warehouse storage and distribution centers. Overall, water use is mostly limited to employees and landscaping.

The City estimates that this sector will be fully-metered by 2015.

Landscape/Recreation Sector

Landscape and recreational water use within the City generally consists of five (5) City parks, public landscaping along streets and medians as well as private parking lot landscaping. Following the adoption of a new metered rate plan in 2009, the City has switched several commercial and industrial business accounts with large landscaping footprints to metered billing and will continue to do so through 2015 when it is expected to have all business accounts fully-metered. The City does not bill itself for water use at public landscaped areas but can benefit from conservation measures with reduced pumping and energy costs. Therefore, it is anticipated that meters will be installed to help gauge the effectiveness of more efficient irrigation systems that are expected to be utilized over the next several years.

Landscape and recreational water use is not expected to increase significantly over the next several years due to recent economic downturns, vastly improved water use efficiencies with irrigations systems and newly-adopted commodity billing rates which should encourage conservation. For the new development that does occur, City engineers and planners will work closely with private developers to ensure that use of City water for landscape irrigation is

responsible and as efficient as possible.

Agricultural Sector

The City's water supply and distribution system does not have agricultural users. Urban water demand and consumption will continue to expand to areas currently used for agricultural purposes over the next 20 to 30 years which will be partially served by the City. Urban water use has historically been less than agricultural use per acre in the Central Valley and this is expected to be the case as Shafter urbanization expands. The City's General Plan can be referenced for more planning details and assumptions on water use impacts.

Assumptions for Water Use Projections (Tables 11-13)

- 2.5% annual growth for all customer classification connection totals except multi-family.
- 100 multi-family units every five years.
- 10% reduction to all sector demand rates by 2015.
- 20% reduction to all sector demand rates by 2020.
- All business accounts metered by 2015.
- All residential accounts metered by 2025.
- Minimum of 300 residential conversions to metered billing annually between 2010 and 2020.

Table 10 - 2005 Actual Water Deliveries

Water use sectors	2005				
	Metered		Not metered		Total
	# of accounts	Volume (Gallons)	# of accounts	Volume (Gallons)	Volume (Gallons)
Single family	20	6,570,000	3,497	1,148,764,500	1,155,334,500
Multi-family	100	14,600,000	500	73,000,000	87,600,000
Commercial	18	6,570,000	231	84,315,000	90,885,000
Industrial	18	51,732,840	44	96,360,000	148,092,840
Institutional/governmental	0	0	3	1,000,000	1,000,000
Landscape	0	0	15	40,000,000	40,000,000
Agriculture	0	0	0	0	0
Other	0	0	0	0	0
Total	***156***	***79,472,840***	***4,290***	***1,443,439,500***	***1,522,912,340***

Not Metered Assumptions:

900 gpd per single family based on historical usage
400 gpd per multi-family based on historical usage
1000 gpd per commecial based on metered usage
6000 gpd per industrial based on metered usage
1000 gpd per day for government/institutional
Landscape covers City parks and street medians

Table 11 - 2010 Actual Water Deliveries

Water use sectors	2010				
	Metered		Not metered		Total
	# of accounts	Volume (Gallons)	# of accounts	Volume (Gallons)	Volume (Gallons)
Single family	23	1,301,757	3,858	1,196,944,500	1,198,246,257
Multi-family	180	15,976,000	500	73,000,000	88,976,000
Commercial	50	29,459,610	273	99,645,000	129,104,610
Industrial	25	51,732,840	13	28,470,000	80,202,840
Institutional/governmental	0	0	3	1,095,000	1,095,000
Landscape	5	16,395,400	10	30,000,000	46,395,400
Agriculture	0	0	0	0	0
Other	0	0	0	0	0
Total	***283***	***114,865,607***	***4,657***	***1,429,154,500***	***1,544,020,107***

Not Metered Assumptions:

850 gpd per single family based on historical usage
400 gpd per multi-family based on historical usage
1000 gpd per commecial based on metered usage
6000 gpd per industrial based on metered usage
1000 gpd per day for government/institutional
Landscape covers City parks and street medians

Table 12 - 2015 Projected Water Demands

Water use sectors	2015				
	Metered		Not metered		Total
	# of accounts	Volume (Gallons)	# of accounts	Volume (Gallons)	Volume (Gallons)
Single family	1,223	341,492,175	3,062	949,868,846	1,291,361,021
Multi-family	780	102,492,000	0		102,492,000
Commercial	357	117,140,472	0		117,140,472
Industrial	42	82,687,392	0		82,687,392
Institutional/governmental	3	985,500	0		985,500
Landscape	17	46,395,400	0		46,395,400
Agriculture	0	0	0		0
Other	0	0			0
Total	***2,421***	***691,192,939***	***3,062***	***949,868,846***	***1,641,061,785***

Not Metered Assumptions:

850 gpd per single family based on historical usage

Metered Assumptions
(10% Redution from 2010):

765 gpd per single family
360 gpd per multi family
900 gpd per commercial
5400 gpd per industrial
900 gpd per day for government/institutional
Landscape covers City parks and street medians

Table 13 - 2020 Projected Water Demands

Water use sectors	2020				
	Metered		Not metered		Total
	# of accounts	Volume (Gallons)	# of accounts	Volume (Gallons)	Volume (Gallons)
Single family	2,723	675,848,600	2,007	622,741,524	1,298,590,124
Multi-family	880	102,784,000			102,784,000
Commercial	394	114,953,850			114,953,850
Industrial	46	81,143,894			81,143,894
Institutional/governmental	3	967,104			967,104
Landscape	18	51,220,522			51,220,522
Agriculture	0	0			0
Other	0	0			0
Total	***4,065***	***1,026,917,969***	***2,007***	***622,741,524***	***1,649,659,493***

Not Metered Assumptions: 850 gpd per single family based on historical usage

Metered Assumptions (10% Redution from 2015):
680 gpd per single family
320 gpd per multi family
800 gpd per commercial
4800 gpd per industrial
800 gpd per day for government/institutional
Landscape covers City parks and street medians

Table 14 - 2025 Through 2035 Projected Water Demands

Water use sectors	2025		2030		2035 - optional	
	metered		metered		metered	
	# of accounts	Volume	# of accounts	Volume	# of accounts	Volume
Single family	5,222	1,296,142,168	5,765	1,430,940,954	6,365	1,579,758,813
Multi-family	980	114,464,000	1,082	126,368,256	1,194	139,510,555
Commercial	435	126,909,050	480	140,107,591	530	154,678,781
Industrial	51	89,582,859	56	98,899,476	62	109,185,022
Institutional/governmental	4	1,067,683	4	1,178,722	4	1,301,309
Landscape	20	56,547,456	22	62,428,391	25	68,920,944
Agriculture	0	0	0	0	0	0
Other	0	0	0	0	0	0
Total	***6,712***	***1,684,713,216***	***7,410***	***1,859,923,391***	***8,180***	***2,053,355,423***
Units: Gallons Per Year						

Metered Assumptions:
680 gpd per single family
320 gpd per multi family
800 gpd per commercial
4800 gpd per industrial
800 gpd per day for government/institutional
Landscape covers City parks and street medians

Table 15 - Lower Income Projected Water Demands

	Low Income Water Demands			
	2015	2020	2025	2030
Total RHNA Housing	31,171,000	34,412,784	37,991,714	41,942,852
Units: gallons per year				

Assumptions:

122 Housing Units Reported Per RHNA and City Housing Element for 2013 Used for 2015
700 gpd per unit
(2020-2030): 2.5% Annual Growth Rate

Table 15 - Lower Income Projected Water Demands

Additional Sales or Uses

Beyond the uses and quantities previously detailed in this plan, the City has no additional sales or uses to report for past, current or future use.

Reliability Planning

Reliability is a measure of a water service system's expected success in managing water shortages. In addition to climate, other factors that can cause water supply shortages are earthquakes, chemical spills, and energy outages at pumping and treatment facilities.

Reliability planning requires information about: (1) the expected frequency and severity of shortages; (2) how additional water management measures are likely to affect the frequency and severity of shortages; (3) how available contingency measures can reduce the impact of shortages when they occur.

Short-term shortages would likely be due to earthquake and/or electricity outages. Long-term shortages would result in lowering groundwater pumping levels thereby increasing the cost of pumping. The City's wells are between seven-hundred feet (700') and eight-hundred feet (800') deep. Historically, a period of water shortage has not affected the quality of the water.

As indicated above, the City is within or adjacent to two irrigation district jurisdiction boundaries that play a major role in groundwater management in the area. North Kern Water Storage District (North Kern) and Shafter-Wasco Irrigation District (SWID) both practice groundwater management through importation of surface water and monitoring of groundwater levels and quality. Both have AB255/3030 Groundwater Management Plans.

SWID has reported to City staff that property owners within City limits are assessed to help fund their maintenance programs and operation. Through a contract with the U.S. Bureau of Reclamation, SWID has distributed approximately 3,000,000 acre-feet of surface water for its agricultural users since 1955 to offset groundwater pumping.

North Kern Water Storage District, as an underlying wholesaler serving areas within City limits, replenishes the groundwater basin through a program that is funded through collection of tolls on

parcels within its district boundaries. These tolls have been established because the overlying lands have received a benefit from the District's recharge program. It is assumed that these tolls will continue to be paid by the overlying landowners. The District has recharged 2,426,579 acre-feet of water, both as direct recharge and in-lieu recharge, over a past period of 14 years which averages of 161,772 acre-feet or 2.91 acre-feet per acre annually.

Three other water districts surrounding the City also have an influence on the area's groundwater balance. These districts are Semitropic Water Storage District, Cawelo Water District, and Rosedale-Rio Bravo Water Storage District. These districts receive surface water supplies from either Federal Central Valley Project (Friant-Kern Canal), the State Water Project (California Aqueduct), or the Kern River. A primary goal of these districts is to maintain groundwater balances and correct long-term overdraft conditions.

Alternative Sources

To date, the City of Shafter has not needed to replace water sources due to consistent levels of production or water quality.

Delivery Capability

One requirement of the system is that it needs to be able to meet peak day and peak hour demands. To plan for long-term water delivery reliability, planners and engineers have examined an increasingly wide array of supply augmentation and demand reduction options to determine the best courses of action for meeting water service needs. In addition to climate, other factors that can cause water supply shortages are earthquakes, chemical spills, and energy outages at treatment and pumping facilities. City planners and engineers include the probability of catastrophic outages when using the reliability planning approach.

These issues are further discussed in the Water Shortage Reliability & Contingency Planning section of this plan.

Options are generally evaluated using the "water service reliability planning approach". Some of the options being implemented by the City to ensure continued water service reliability include the following:

- Each of the four City water tank/booster pump facilities is equipped with back-up power than can supply needed system pressure for extended periods of time during power outages.
- Operating pressures can be lowered to provide "make up" capacity in an emergency.
- The City employs temporary staff as "Water Conservation Officers" during drought periods to monitor and perform residential and landscaping water audits. Water customers observed to be wasting water are issued warnings and requests for their cooperation in minimizing water use.
- The City enforces codes for low-flow toilets and household water fixtures that promote

conservation for new construction.

- One-third of the City's wells are provided permanent alternative power supplies.

Wholesale Water

The City presently is not a wholesale water purveyor. However, other water purveyors, most notably North Kern Water Storage District, and Shafter Wasco Irrigation District, supplement regional groundwater resources serving the City through their direct and in-lieu groundwater recharge projects.

Transfer and Exchange Opportunities

Currently the City of Shafter does not have transfer or exchange agreements in place with other public agencies or special districts. It is not anticipated that transfers or exchanges would occur in the near future. However, as explained above, the groundwater basin is managed by two water districts, the Shafter-Wasco Irrigation District and the North Kern Water Storage District. Both of these Districts have AB 255/3030 Groundwater Management Plans in place and both import surface water to recharge local groundwater supplies and manage the effects of groundwater pumping.

The City will continue to explore transfer and exchange opportunities with neighboring agricultural water users and special water districts.

Projects and Programs to Ensure Supply

In order to ensure a safe and reliable water supply for its customers, the City of Shafter has both annual maintenance projects and capital improvements projects planned for its water enterprise.

<u>Operation and Maintenance Program</u>

- Annual Well Maintenance Project
  - ⇒ Brush and clean well casing
  - ⇒ Inspect motor and pump
  - ⇒ Repairs and updates as needed
  - ⇒ Lower pump if needed to adapt to lower water levels
- Tank Inspection and Cleaning
- Water Conservation Programs
  - ⇒ Patrols by Water Conservation Officer
  - ⇒ Outreaching and promotions
  - ⇒ Water use restrictions
  - ⇒ Leak detection

<u>Capital Improvement Program</u>

Planned CIP Projects

Table 16 - Planned CIP Projects

Project Description	2011	2012	2013	2014	2015	2020	2025
New Storage 800,000 Gal. Tank at East Shafter (Airport) Service Area	X						
Re-Activate Well 9 (Restores 1,000 gpm of Capacity)	X						
Carbon Plant at Existing Well Site to Treat for Organic Constituents		X		X	X		
Add Well 15 to Water System (Capacity Increase of 1,000 gpm)			X				
Replace Well 6 & Add 1,000 gpm Capacity)					X		
Replace Well 7 with New Well & Add 500 gpm Capacity)						X	
Replace Well 8 with New Well (Maintain Existing Capacity)							X

Development of Desalinated Water

There are no current plans for the City to develop brackish groundwater. There are areas approximately fifteen miles west of the City that are underlain by shallow (perched) groundwater. These sources are presently too distant and uneconomical to access at this time.

Wastewater Treatment Plant Recharging

Two wastewater treatment plants serve the residents and businesses of Shafter. Both of these plants are operated by other agencies and/or districts.

City of Shafter/North of the River Sanitary District (NORSD) Plant

Through a Joint Powers Agreement (JPA) executed in 1990, the ownership of the NORSD/City of Shafter Wastewater Treatment Facility (WTF) became vested in NORSD and the City of Shafter in direct proportion to the fraction of the total cost of the treatment and disposal facilities paid by each. The WTF, which is located within City limits, is operated by NORSD and renders wastewater treatment services for approximately 1.2 million gallons per day (MGD) of average daily flow from the City. This generally accounts for all residences and most businesses and industries within the City limits.

The City owns one-third (1/3) of the WTF plant's current 7.5 MGD of raw sewage capacity or 2.5 MGD. It is anticipated the City will continue to exercise its option of purchasing an additional one-third ownership of future plant capacity expansions to ensure sewer service for future growth and development.

Per the Waste Discharge Requirements for the WTF (Central Valley Regional Water Quality Control Board Order No. R5-2009-0088), recycling of WTF effluent is allowed at "reasonable agronomic rates considering soil, climate and irrigation management plan (Page 14)". Effluent from primary clarifiers is pumped through a biofilter, which reduces organic matter. After this process, the effluent flows into a final clarifier. Through sedimentation, particulate matter settles to the bottom of the tank and is removed. A portion of the recycled water from this treatment process is used by a neighboring farming operation for crop watering thus eliminating reliance on groundwater supplies.

Shafter Field Airport District Wastewater Plant

The wastewater treatment plant located at within the Minter Field Airport District (Minter Field) was constructed in 1940 and currently services the commercial and industrial customers located within Minter Field and the City's Industrial Park. The plant is operated by Minter Field as a single-stage trickling filter plant that treats approximately 200,000 gallons of wastewater per day. The influent flow is pumped directly to the intermediate clarifier, which now serves as the primary clarifier in the single stage trickling filter process. Effluent from the final clarifier flows into an effluent pond, where it recharges the groundwater basin.

The summary of wastewater collected and treated below provides actual flows from the NORSD/City WTF. A growth rate of 2.5% was applied to the 2010 actual flow for future year projections.

Table 17 - Wastewater Collected & Treated

Wastewater Collected & Treated	2005	2010	2015	2020	2025	2030
NORSD/City Plant	1,300	1,386	*1,530*	*1,689*	*1,865*	*2,059*
Per Recycled Water Standard	1,300	1,386	*1,530*	*1,689*	*1,865*	*2,059*
Units: ac-ft per year						

Assumptions:

2005 & 2010: Actual Metered Flow(NORSD Plant Only)

(2015-2035): 2.5% Annual Growth Rate

Table 18 - Recycled Water Uses

Disposal Method	Treatment Level	2010	2015	2020	2025	2030
Agricultural	Secondary	1,386	1,530	1,689	1,865	2,059
Total		1,386	1,530	1,689	1,865	2,059
Units: ac-ft per year						

Potential and Projected Recycled Water Use

The City does not currently use recycled water for any of its water system applications or services nor does have immediate access recycled water. There are other potential customers and uses for recycled water within the City. These typically involve landscape or agricultural applications or even possibly industrial water users. However, many of these potential uses

require the recycled water to undergo certain treatment processes to meet the water quality standards which has proven thus far to be cost-prohibitive for both the private and public sector. The City will continue to reassess the potential for using recycled water for both current and future uses.

The previously mentioned NORSD/City WTF currently treats approximately 5.2 million gallons per day (MGD) and uses the treated effluent for groundwater recharge through direct percolation or indirect recharge from agricultural use. All recharging occurs on properties within close proximity to the WTF that also overlie the groundwater basin. Oildale Mutual Water Company (OMWC) has purchased the water rights for NORSD's share of the discharge which is currently estimated as 4.0 MGD. The City has maintained ownership of its share of the effluent recharge which is currently as estimates at 1.2 MGD.

Plan for Optimizing the Use of Recycled Water

The City's 2005 Urban Water Management Plan did not propose or foresee recycled water use for the year 2010 or beyond. It did not and still does not currently have funds to conduct analyses that would be used to evaluate, develop and optimize recycled water opportunities. However, its participation with multiple integrated regional water management groups may provide the planning and funding to make this goal more feasible in the years ahead.

WATER SHORTAGE RELIABILITY & CONTINGENCY PLANNING

Reliability is a measure of a water service system's ability to manager water storages. Reliability assessment and planning requires that the City at least know the following:

1. The expected frequency and severity of shortages
2. How additional water management measures are likely to affect the frequency and severity of shortages
3. How available contingency measures can reduce the impact of shortages when they occur.

The City has not experienced a severe or even significant water supply shortage to date and the proven reliability of the local aquifer as a supply suggest this to continue into the foreseeable future. The yields have been steady and productive and, as more fully discussed above, continue to be recharged by percolation in the Kern River channel, canals and other means.

The data presented in this plan assumes the continued 100-percent reliability of the water supply during normal, single-dry, and multiple-dry water years. These numbers further assume that the groundwater yield is not reduced due to water quality issues. However, issues impacting water supplies and planned City responses to these issues are discussed further it this plan.

The City's water waste prohibitions will continue to be enforced and its demand management measures will be expanded and improved to better ensure that its urban water use is as efficient as reasonably possible. These efforts will be particularly important should the uncertainly of statewide surface supplies and reoccurring droughts continue to put more demand on groundwater sources throughout the Central and San Joaquin Valleys.

The most realistic circumstances that could result in City water shortages, based on past experienced and forecasts for the future, would be emergencies caused by natural disasters, manmade disasters or terrorism, catastrophic power failures or spikes in water contaminants that can not be remedied expeditiously.

The data provided the following table suggests that the supply reliability is adequate:

Table 19 - Supply Reliability Estimates

Supply Water Reliability Estimates (Acre-Feet)					
Average (Normal) Year	Single Dry Year	Multiple Dry Water Years			
		Year 1	Year 2	Year 3	Year 4
4,739	4,739	4,739	4,739	4,739	4,739
% of Normal Yr:	100%	100%	100%	100%	100%

The projected groundwater supply under normal, single-dry, and multiple-dry water years are

expected to be 100% reliable based on historic conditions. These numbers assume that the groundwater yield is not reduced due to water quality issues but potential water quality impacts will be addressed.

Water Quality Impacts

Some ground water contamination does exist in the Shafter area. The ground water quality issues of primary concern include salt intrusion primarily from agricultural activities, nitrate contamination from natural and agricultural activities, organic chemical contamination also from agricultural pesticide and fumigants and arsenic.

The only water treatment currently required of the City's water supply is disinfection by chlorination for microbiological contaminants. Water is regularly tested for coliform bacteria which is detected occasionally but remedied by adjusting the chlorine dosage.

In 2009, the City started using its first permitted carbon treatment plant to reduce the levels of an organic contaminant known as 1,2,3-trichloropropane, commonly referred to as "TCP", which is not currently regulated by the State but it eventually will be. The City Council has chosen to be proactive with TCP removal by investing in treatment systems now to ensure that City staff knows how they can be operated safely and efficiently once TCP becomes regulated. The next carbon plant at a second well site is scheduled for installation by 2012.

In 2010, water from one well slightly exceeded the State health standard for arsenic of 10 parts arsenic per billion parts water (ppb). The City is currently working with the State on a corrective action plan and has committed to finding a solution for this detection issue by 2012.

The following will be the City's priorities with respect to ensuring compliance with water quality standards:

- Continue to conduct routine sampling of wells for contaminants of concern at a frequency that meets or exceeds State requirements.
- Continue to conduct bacteriological testing water from both wells and distribution system.
- Expand use of carbon treatment plants at well sites to address future enforcement of health standard for TCP.
- Conduct pilot studies to evaluate uses of treatment systems and blending techniques with the intent of developing safe and cost-effective methods of meeting water quality standards.

Vulnerability to Climatic Shortage

As described previously herein, the City relies on groundwater to supply 100% of its current demand. Although there was not a significant threat to groundwater reliability and production,

water levels have dropped to two-hundred-and-eighty feet (280') as shown on Figure 2 of this plan. The reliability of the groundwater supply is still considered sufficient at this time. However, during a prolonged drought, the City has the authority to and staff to enforce emergency water conservation measures.

Three Year Minimum Water Supply

For a short-term interruption in the water supply, including a single dry year, demand would not diminish supply appreciably. Since the City relies on groundwater to supply 100% of its demands, periods of drought may be withstood although deep well pumps might have to be lowered to respond to a lowering groundwater table. For this reason, it is projected that supply will equal demand even during multiple dry years. During periods of extended drought, the City will rely on public outreaching and other means of extraordinary conservation to minimize demand to the greatest extent practicable. As set forth in the discussion below and in the section of this plan describing the City's Demand Management Measures, greater reductions will require possible conservation enforcement and water use restrictions. Table 16 below forecasts what demands for the following three years with 15% reductions would be during a potential three-year dry period.

Table 20 - Three-Year Minimum Supply Projections

	Normal Year	Multiple Dry Years w/2.5% Growth Assumed		
Water Supply Sources	**2010**	**2011**	**2012**	**2013**
Groundwater Demand	4,739	4,857	4,979	5,103
Consumption (with 15% reduction)	4,028	4,129	4,232	4,338
Difference	711	729	747	765
Units: Acre-Feet Per Year				

Basis of Water Year Data

Based the historical use of the groundwater aquifer which has and continues to serve 100% of its urban water, the City of does not anticipate any water shortages in any average rainfall year through 2035. The conservation measures used to address dry years are covered in the City's Demand Management Measures which are covered further in this plan.

Table 17 listed below relies on the cumulative water balance estimates provided in Figure 21 the Water Supply Report: 2007 which was developed and distributed by the Kern County Water Agency (KCWA).

Table 21- Basis of Water Year Data

Water Year Type	Base Year(s)
Average Water Year	1985
Single-Dry Water Year	1994
Multiple-Dry Water Years	1987-1992

According to KCWA's report, the reliability of the groundwater basin as a source of water depends the sustained delivery and interdependence of surface water sources, including the Kern River, Central Valley Water Project and State Water Project. Successful coordination and management of the region's basin led the report to further state that the "basinwide water use efficiency" measures in 2007 was at 99%, making Kern County one of the State's most efficient water use areas.[3]

Factors Resulting in Inconsistency of Supply

Given that the City has relied and will continue to rely on groundwater for its water supply, it should not be directly affected by volatility with surface water supplies. Groundwater supplies are not expected to be impacted by long-term shortages due to the factors outlined in the following table:

Table 22 - Factors Resulting in Inconsistency of Supply

Type of Supply	Limitation Quantification	Legal	Environmental	Water Quality	Climatic
Groundwater Well	None	None	None	None	None

Stages of Action & Enforcement Methods

A Water Shortage Contingency Plan (Contingency Plan) is a required component of the City's 2010 UWMP. Among other things, the City's Contingency Plan must analyze stages of action to be undertaken by the City in response to water supply shortages, including up to 50% reduction in water supply.

For the reasons set forth in this UWMP, it is not anticipated that the amount of groundwater supply available to the City would decrease as a result of single-dry or multiple-dry year scenarios. However, for the purpose of this Contingency Plan, the following levels of supply reductions are assumed:

[3] Kern County Water Agency, Water Supply Report: 2007, Pages 19-20

- Stage 1 -15% reduction
- Stage 2 - 30% reduction
- Stage 3 - 50% reduction

Addressing emergency water shortages includes voluntary and mandatory conservation, depending on the causes, severity, and anticipated duration of the water supply shortage. The following table presents the different stages, water supply conditions, and anticipated responses that are part of the City's Contingency Plan.

Table 23 - Water Shortage Contingency Rationing Stages

Stage No.	Condition of Available Water Supply	% Shortage	Program Type
1	< 85% Monthly Peak Hour Demand	<15%	Voluntary
2	< 70% Monthly Peak Hour Demand	15-30%	Mandatory
3	< 50% Monthly Peak Hour Demand	30-50%	Mandatory

Stage 1 Program:

Stage 1 consists of voluntary participation by the City's water customers with the City providing community education and outreaching such as distributing flyers and informational bulletins via utility bill inserts.

The City will dispatch its appointed Water Conservation Officer during peak usage periods for public outreaching only and will also consider reducing its water system operating pressure. Reduction of system pressure has been demonstrated to achieve about 20% - 30% reduction in water use (primarily landscaping).

Stage 2 Program:

Stage 2 includes Stage 1 outreaching and monitoring to promote proper water use methods. In addition, the City will employ personnel to monitor daily water excesses and contact those who are using excessive amounts of water (primarily for landscaping purposes). City crews will have authority to issue citations and fines to customers that continually waste water. The City will also focus its outreaching and enforcement efforts on flat rate customers with possible distribution of City-funded low-flow fixtures and other conservation devices.

Stage 3 Program:

Stage 3 includes Stage 1 and 2 measures plus possible restrictions on irrigation for landscaping of City facilities (parks, medians, etc.) as well as large lot water customers.

Monitoring of Shortage Stages

During Stage 1 or 2 conditions, weekly groundwater production figures shall be compiled and the Public Works Director shall continuously verify that weekly production targets are being met. The City Council will be briefed at each of their regularly scheduled meetings on the

effectiveness of the conservation programs. During a Stage 3 condition, groundwater production records shall be monitored on a daily basis.

Catastrophic Supply Implementation Plan

A specific Emergency Response Plan for the City's water supplies and distribution systems is on file with the Public Works Director. Following is a summary of possible emergency situations and the actions the City plans to take for each one:

Table 24 - Response to Types Catastrophes

Type of Catastrophe	Response to Catastrophe
Regional Power Outage	Use back up natual gas and diesel motors at select well and tank sites. Use portable generators available from local vendors to operate the most critical water infrastructure. Additionally the City will notify residents to minimize water usage during the time of the outage. This will be by local radio and door to door notification.
Earthquake	Wells that remain serviceable will be utilized. Portable power supplies will be used if necessary. Wells adjacent to the City will be employed, if necessary, and water piped to the City's distribution system for uses other than potable supply. If necessary, bottled water will be trucked into the City for drinking purposes.
Terrorism Incident	In the event that a water source or an area of the water distribution system has been compromised due to terrorism, water personnel will isolate the risk from the water customers and make use of alternate production facilities as available.

Table 25 - Back-Up Use of Wells and Tanks

	Power Supplies	
Site	**Normal**	**Back-Up**
Wells 6, 8 & 12	Electricity	Portable Generators
Well 11	Electricity	Diesel Standby with Rt Angle Drive
Well 7	Natural Gas	Electricity with Rt Angle Drive
Tank #1 & #2 Booster	Electricity	Natural Gas
Tank #3 & #4 Booster	Electricity	Permanent Generators
Well 14	Electricity	Natural Gas
Well 17	Electricity	Portable Generators
		Diesel Standby with Right Angle Drive

Prohibitions and Penalties

City Ordinance No. 432 was adopted in 1991 to respond to the effects of a multi-year statewide drought. The highlights of the ordinance are as follows:

- Prohibits excessive use of water with landscape irrigation, washing of automobiles and other private property.
- Prohibits the escape of water through leaks and breaks in private plumbing.
- The City Council is authorized to restrict residential and business water use in the event of a water shortage.
- Violations of ordinance provisions may be cited, subject to a mandatory installation of mechanical device to restrict water flow rate to lot being served, fined or even prosecuted depending on the frequency and severity of the wasting.

A copy of this ordinance is included with this plan. To date, the City assumes that it will be sufficient to ensure responsible use of our water but still may consider additional Council action to adapt to the needs of the water system and conditions of the supplies.

The City will typically appoints a Water Conservation Officer every summer during peak morning and afternoon water use to look for signs of water wasting and, if necessary issue public outreaching notices in both English and Spanish to educate customers on importance of responsible water use. Another means of addressing water shortages would be a reduction of system pressure which has been demonstrated to achieve about 20% - 30% reduction in use.

Table 26 - Projected Normal Year Supply and Demand Comparison

	2010	2015	2020	2025	2030
Supply Totals	*4,739*	5,037	5,322	5,171	5,708
Demand Totals	*4,739*	5,037	5,322	5,171	5,708
Difference	0	0	0	0	0
Demand % of Year 2010	-	106%	112%	109%	120%
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Units: Acre-Feet Per Year					

Table 27 - Projected Single Dry Year Supply and Demand Comparison

	2010	2015	2020	2025	2030
Supply Totals	*4,739*	5,037	5,322	5,171	5,708
Demand Totals	*4,739*	5,037	5,322	5,171	5,708
Difference	0	0	0	0	0
Demand % of Year 2010	-	106%	112%	109%	120%
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Units: Acre-Feet Per Year					

Table 28 - Supply and Demand Comparison for Multiple Dry-Year Events

	2015	2020	2025	2030
First Year Supply				
Supply totals	5,037	5,322	5,171	5,708
Demand totals	5,037	5,322	5,171	5,708
Difference	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%
Second Year Supply				
Supply totals	5,037	5,322	5,171	5,708
Demand totals	5,037	5,322	5,171	5,708
Difference	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%
Third Year Supply				
Supply totals	5,037	5,322	5,171	5,708
Demand totals	5,037	5,322	5,171	5,708
Difference	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%
Units: Acre-Feet Per Year				

Table 29 - Supply& Demand Comparison for Multiple Dry Years (2011-2015)

	2011	2012	2013	2014	2015
Supply Totals	4,857	4,902	4,947	4,993	5,037
Demand Totals	4,857	4,902	4,947	4,993	5,037
Difference	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Units: Acre-Feet Per Year					

Table 30 - Supply & Demand Comparison for Multiple Dry Years (2016-2020)

	2016	2017	2018	2019	2020
Supply Totals	5,162	5,202	5,243	5,283	5,322
Demand Totals	5,162	5,202	5,243	5,283	5,322
Difference	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Units: Acre-Feet Per Year					

Table 31 - Supply & Demand Comparison for Multiple Dry Years (2021-2025)

	2021	2022	2023	2024	2025
Supply Totals	5,455	5,384	5,314	5,244	5,171
Demand Totals	5,455	5,384	5,314	5,244	5,171
Difference	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Units: Acre-Feet Per Year					

Table 32 - Supply & Demand Comparison for Multiple Dry Years (2026-2030)

	2026	2027	2028	2029	2030
Supply Totals	5,300	5,402	5,506	5,612	5,708
Demand Totals	5,300	5,402	5,506	5,612	5,708
Difference	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Units: Acre-Feet Per Year					

DEMAND MANAGEMENT MEASURES

Although the City of Shafter is committed to encouraging and promoting water conservation, it prioritizes efforts and programs that are cost-effective for its operation. The City Council generally directs staff to deliver water that is reliable, in compliance quality standards and billed at a reasonable rate.

At the time the 2005 Urban Water Management plan was prepared and submitted to the State, it was stated that the effectiveness of reducing water consumption was limited by the fact that there were only 50 metered rates out of the nearly 3,700 citywide service connections. Since then, the City has adopted a new financial plan for the water enterprise through 2014 that funds the implementation of several hundred meter retrofits and conversions to meter billing. To date, this plan has increased the metered billing customer total to approximately 300 which should reach 1,000 at the end of 2014. It is anticipated that the role and funding of conservation programs will increase as the use of meters increases within the City's system. Ultimately, the City plans to have its system fully-metered by 2025 in order to comply with regulations in place with the passage State of California Assembly Bill No. 2572 (AB 2572).

DMM A: Water Survey Programs for Single-Family Residential and Multifamily Residential Customers

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

To date, approximately 10% of water supplied by the City is metered for billing purposes. In order to work towards complying with regulations pertaining to metered water use that became effective with AB 2572, the City adopted a new multi-year financial plan and budget that allocates funds for annual residential meter retrofits. Prior to the first round of conversions to metered billing in 2010, the City conducted a pilot study that involved reading several newly-installed meters for a period of approximately one year to gather and assess consumption data for houses of various construction types and sizes. This data was used to develop a new meter billing rate structure to ease a customer's transition from flat to metered billing. Specifically, a combination of a flat meter service fee and a usage fee, consisting of consumption charged a commodity rate, would ideally be similar to the original flat rate provided usage is in line with the average monthly use that the City observed through its pilot study.

Following the first round of meter retrofits and meter billing conversions in 2010, water personnel have been routinely performing audits at the request of affected customers at no charge. This is a service that the City has provided for its metered commercial and industrial customers as well.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds. As the meter retrofit program expands, the need for a separate budget line item will be reassessed on an annual basis.

DMM B: Residential Plumbing Retrofit

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

The City requires all new construction to install low-flow devices such as toilets and showerheads but does not have an enforceable ordinance requiring the replacement of high-flow fixtures for older homes and businesses with their low-flow counterparts. The City estimates that there all well over 2,000 single family units that were constructed before the low-flow fixture requirements. The staffing and materials needed to conduct a Citywide low-flow plumbing retrofit for these customers are cost prohibitive at this point based on budget availability.

As a service to customers that are converted to meter accounts and also those that are simply wishing to conserve, the City has purchased an allotment of one-gallon displacement bags for toilets and low-flow showerheads that will be available to customers without low-flow fixtures at no charge starting in July, 2011. The availability of the fixtures will be promoted through monthly billing inserts. The interest and feedback from customers that the City receives regarding this promotion will be used to further assess the need to budget a citywide effort.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds. The need for a separate budget line item will be reassessed on an annual basis based on feedback the City receives from customers participating in low-flow fixture promotions.

DMM C: System Water Audits, Leak Detection and Repair

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

Through its newly-adopted water billing rate structures, the City funded a new full-time position, currently classified as a "Utility Technician", with a primary of focus of ensuring that the water system is operating as efficiently as possible. Among the Utility Technician's daily routines is monitoring the following:

1. Flow readings from well and tank sites.
2. Pressure readings at various points in the system
3. Signs of pavement deterioration where water mains are located.

The City has not conducted formal water audits of the distribution system. However, the City is scheduled to receive training on the use of leak detection field equipment starting in July, 2011 and will likely purchase its own equipment shortly thereafter. Areas of importance for future leak detection will be water mains and connections older than or 20 years or areas within system that have been prone to frequent repairs.

BUDGET: The City has budgeted approximately $100,000 annually to fund the new Utility Technician position to ensure that water audit and leak detection programs are conducted.

DMM D: Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

- In 2009, the City adopted a new meter rate schedule that combines a fixed service fee that varies on meter size and a citywide commodity rate.
- Approximately 2,500 of the City's 4,100 water service connections are for residential customers that do not have meters because they were constructed before the Early-1990's when a meter installation was required at each connection. The cost of retrofitting all of these in the near term is cost prohibitive at this point but the City is budgeting approximately $150,000 annually to work towards having all connections metered by 2025.
- Approximately 1,300 of the City's 4,100 water service connections are for residential customers that do have meters but have not been billed a metered rate since connecting because the City did not have staffing to perform manual reads. The City's newly-funded meter retrofit program will have these existing manual read meters replaced with Automatic Meter Reading (AMR) standards that are equipped with radio transmitters to communicate with a handheld data collector for more efficient reads. The City plans to have all of the service meters completely replaced with AMR assemblies and affected customers converted to meter billing by 2015.
- New residential tracts will be conditioned to have lot owners sign up for a metered water service account.
- All new commercial and industrial customers are now placed on a meter rate schedule.

It is anticipated that customers that are put on metered service plans will reduce their usage by 10%.

BUDGET: The current annual budget for implementing this DMM is $150,000.

DMM E: Large Landscape Conservation Programs and Incentives

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

The following represents the City's large landscape services:

- Five City park sites.
- Four school campuses for grades K-12
  - ⇒ Richland Junior High
  - ⇒ Golden Oak Elementary

    - ⇒ Sequoia Elementary
    - ⇒ Shafter High School
- Landscaped street medians.
- Industrial and business parks.

Despite not having funds to offer incentives or staff to operate a defined landscape conservation program, the City's water enterprise has started to implement conservation measures and is currently prioritizing the following policies:

1. Install meters at all park water services to monitor usage.
2. Conduct routine leak detection surveys at all parks.
3. Install meters at all school campuses and convert accounts to metered billing. Currently, only one of the four campuses has a metered account.
4. Minimize use of grass and maximize drought tolerant planting and irrigation for public landscaping behind sidewalks and inside street medians.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise and park division operational funds.

DMM F: High-Efficiency Washing Machine Rebate Programs

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

The City has not developed a rebate program because it lacks the staffing to develop and maintain one. The City distribution system typically pumps 1.5 billion gallons every calendar year and it costs approximately $400,000 in energy costs per year to operate our wells, tanks and booster stations, which averages to $0.03 of energy costs per every gallon of water pumped.

In analyzing the feasibility of a rebate program, the City assumed $100 as a rebate that offers enough incentive for customers to upgrade to a high-efficiency unit. Such a unit could provide a 25% reduction to a typical machine's consumption of 40 gallons per load, leaving 10 gallons in water savings per load. A typical household could be expected to run three loads per week which leaves 1,560 gallons in water savings per year per unit. The energy savings to the City per unit would be approximately $46 per year.

It is reasonable to expect a machine to have enough of a life span to enable the City to recover the initial cost of the rebate. However, properly developing and maintaining a rebate program, as well as ensuring that high-efficiency units are properly installed, would likely require an additional staff member and resources that the City can not justify funding without additional research. The City is willing to provide a questionnaire for its water customers as a bill insert to survey their interest in such a program and use the results to further evaluate its feasibility.

BUDGET: No specific budget has been set-aside for this DMM at this time.

DMM G: Public Information Programs

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

The City feels that that producing and distributing water is one of its most critical services it can provide. The City Council is very proactive with the operation of its water system and provides frequent opportunities for its water customers to learn more about issues involving their water and to participate in the process of addressing them. The following are some notable examples:

- Water system update provided by the Public Works Director as a routine informational bulletin item at each City Council meeting.
- Links to information on water quality and conservation provided on the City's website and through monthly utility billing inserts.
- Water audits are performed for customers free of charge.
- Metered billing customers are now provided with historical consumption data in their billing statements to better understand their usage and how conservation can benefit them.

Additional public information and outreaching programs can be pursued and implemented as staffing and budgets allow.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds.

DMM H: School Education Programs

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

The City water enterprise currently lacks staffing and funds to implement its own school education programs. However, beginning in its Fiscal Year 2011-2012, staff will purchase educational literature and DVDs offered by such resources as the American Waterworks Association (AWWA) and make them available to local educators in conjunction with national or state awareness campaigns. The targeted ages for these materials will be preschool through high school.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds. It is anticipated that these costs will total to $1,000 annually.

DMM I: Conservation Programs for Commercial, Industrial, and Institutional Accounts

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

Approximately 90% of the water produced by the City is consumed by customers billed on a flat rate. In addition to residential customers, the City is also converting its business customers (i.e., commercial, industrial, landscape and institutional) to metered billing and is requiring all new business connections to have metered billing.

City water personnel have and will continue to work closely with business customers to help them understand their usage and make sure it is as efficient as possible. For established customers, the City will provide audits at no charge and often replace and update meters at no charge to ensure that usage is reported accurately. For new connections, the City closely examines and assesses a proposed water use, particularly landscape and irrigation plans, to ensure that applicable conservation methods can be used.

As the City expands its meter retrofits and billing conversion program, the conservation programs and outreaching will continue to play a larger role with the water system operation.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds.

DMM J: Wholesale Agency Programs

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

This DMM is not applicable to the City of Shafter because it is not a wholesale entity.

BUDGET: There is currently not a budget line item for this DMM program.

DMM K: Conservation Pricing

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

To date, approximately 90% of the water delivered to City customers is still billed per a flat monthly service rate. In 2010, a new five-year financial plan and rate restructuring plan was adopted with the intent of converting several hundred customers to metered rates which will affect residential, commercial, landscape and industrial connections. The intent of the new meter rates is to ensure that the City can recover its fixed costs through a fixed monthly service fee based on meter size but still give the customer some incentive to conserve with a commodity rate component as well. The meter rate schedule is detailed below.

	Water Meter Rates & Annual Increases				
	2010	2011	2012	2013	2014
Connection Type	Fixed Service Fee				
3/4" or Smaller Meter - Small	$15.00	$17.25	$18.98	$20.87	$21.92
3/4" or Smaller Meter - Medium	$22.00	$25.30	$27.83	$30.61	$32.14
1" Meter	$30.00	$34.50	$37.95	$41.75	$43.83
1.5" Meter	$50.00	$57.50	$63.25	$69.58	$73.05
2" Meter	$110.00	$126.50	$139.15	$153.07	$160.72
3" Meter	$250.00	$287.50	$316.25	$347.88	$365.27
4" Meter	$575.00	$661.25	$727.38	$800.11	$840.12
6" or Larger Meter	$1,750.00	$2,012.50	$2,213.75	$2,435.13	$2,556.88
	Usage Rate (per 1,000 gallons of use)				
All Connections	$0.40	$0.46	$0.51	$0.56	$0.58

This was a significant change for metered customers using the previous rate plan in which the fixed fee previously purchased pre-determined allowance of water before a commodity rate was assessed. The City has converted nearly 100 businesses accounts with landscape, commercial and industrial uses and approximately 200 residential accounts to the new meter rate plan to date.

The current financial plan for the water enterprise calls for 150 residential meter account conversions annually with potentially more as budgets and staff time allow. Business accounts will also be converted as budgets and staff time allow.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds.

DMM L: Water Conservation Coordinator

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

The City has not appointed an official Water Conservation Coordinator at this time. It did, however, amend its Municipal Code during the drought years in the early-1990's to permit the City Council to restrict water used and enforce conservation if needed. The City proposes to formally appoint this role to the Public Works Director in 2011 concurrently with or shortly after the adoption of this 2010 Urban Water Management Plan. The use of the City's future Water Conservation Coordinator will be modeled to use and promote other demand management measures.

Other staff members that will play a role in conservation coordination include the following:

- State-Certified Shift Distribution Operators will be responsible for evaluating the effectiveness of water conservation efforts in the field by monitoring water consumption and overseeing our proposed metering retrofit program.

- Director of Administrative Services will be responsible for distributing public information with utility bill inserts for our customers.
- Water Conservation Officers will be used seasonally (mostly during summer months) to patrol service areas and look for obvious cases of water wasting and educate the public on how to conserve. The officers are typically bi-lingual to ensure that Spanish speaking customers are not excluded from this effort.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds.

DMM M: Water Waste Prohibition

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

In 1991, the City passed and adopted Ordinance No. 432 on March 19, 1991, amending the Shafter Municipal Code, which stated it would be unlawful for residents and private businesses to "cause or permit substantial or excessive amounts of such water to drain, flow or spray into or upon, or to collect or stand upon, any street or public highway within the City". This applied to irrigation, washing of automobiles and exterior surfaces (sidewalks, driveways, etc.) and escaping water from plumbing leaks or breaks. City officials were also given the authority to restrict irrigation water use and assess penalties and fines to violators of the ordinance.

The intent of Ordinance No. 432 was to address the statewide drought period in the early-1990's. The goal of the ordinance was to achieve a 20-percent (20%) reduction in water use prior to the peak summer demand. Past enforcement of the ordinance did enable the City to detect and correct some cases of excessive water use and it did appear to affect the per capita water consumption rate as outlined in the following table:

Year	Population	Water Consumed (Gal)	Gallon/Person
1989	7,900	856,147,000	108,373
1990	8,607	894,022,000	103,871
1992	10,026	854,618,000	85,240

The City has conducted conservation and public outreaching for more recent drought periods but has generally not seen a need to enforce water restrictions or issue citations for water wasting but can and will should the need the arise.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds.

DMM N: Residential Ultra-Low-Flush Toilet Replacement Programs

IMPLEMENTATION DESCRIPTION AND SCHEDULE:

For approximately 15 years, the City has required all new construction with water connections to install low flow toilets. The City estimates that there all well over 2,000 single family units that were constructed before the low-flow fixture requirements. The staffing and materials needed to conduct a citywide low-flow toilet replacement program for these customers is cost prohibitive at this point based on budget availability.

As a service to customers that are converted to meter accounts and also those that are simply wishing to conserve, the City has purchased an allotment of one-gallon displacement bags for toilets that will be available to customers without low-flow fixtures at no charge starting in July, 2011. The availability of the fixtures will be promoted through monthly billing inserts. The interest and feedback from customers that the City receives regarding this promotion will be used to further assess the need to budget a citywide effort.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds.

Table 33 - Demand Management Measure Implementation Summary

		Implementation		
DMM	Description	Current	Planned	Not Planned
A	Water survey programs for sfr & mfr customers.	X		
B	Residential plumbing retrofit.		`	Not Planned
C	System water audits, leak detection and repair.		2011	
D	Metering w/commodity rates for all new connections and retrofit of existing connections	X		
E	Large landscape conservation programs and incentives.			Not Planned
F	High-efficiency washing machine rebate programs.			Not Planned
G	Public information programs.	X		
H	School education programs.		2011	
I	Conservation programs for commercial, industrial and institutional accounts.	X		
J	Wholesale agency programs.			Not Planned
K	Conservation pricing.	X		
L	Water conservation coordinator.		2011	
M	Water waste prohibition.	X		
N	Residential ultra-low-flush toilet replacement programs.			Not Planned

WATER SHORTAGE CONTINGENCY ORDINANCE

962

ORDINANCE NO. 432

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SHAFTER AMENDING TITLE 8 OF THE SHAFTER MUNICIPAL CODE RELATING TO MISCELLANEOUS HEALTH REGULATIONS.

THE CITY COUNCIL OF THE CITY OF SHAFTER DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Title 8 of the Shafter Municipal Code is hereby amended as follows:

Amend Section 8.40.010 Prohibitions.

It is unlawful for any person using water in and about any private residential premises or private business premises to cause or permit substantial or excessive amounts of such water to drain, flow or spray into or upon, or to collect or stand upon, any street or public highway within the city. This applies to the following situations:

A. The irrigation of grass, lawns, ground cover, shrubbery, open ground, trees and gardens.

B. The washing of automobiles or other vehicles, sidewalks, walkways, driveways, parking lots and all other hard-surfaced areas.

C. The escape of water through breaks or leaks within the water users plumbing or distribution system for any substantial period of time in which such break or leak should reasonably have been discovered and corrected.

In the event of a water shortage, the City Council shall have the authority to restrict the irrigation of grass, lawns, ground cover, shrubbery, open ground, trees and gardens to specific days by implementing the following schedule:

A. Residential and business premises with a street address ending in an even number will be permitted to irrigate on even days of the month, such as the 2nd, 4th and 6th.

B. Residential and business premises with a street address ending in an odd number will be permitted to irrigate on odd days of the month, such as the 1st, 3rd and 5th.

ORDINANCE No. 1

Amend Section 8.40.020 Violation - Penalty.

Any person who violates any provision of this article shall be subject to citation by an authorized officer of the City.

Any person who violates any provision of this article shall be subject to the installation of a mechanical device to restrict the rate of water flow to the residential or business premises found to be in violation.

Any person who violates any provision of this article also shall be guilty of a misdemeanor and shall, upon conviction, be punished by a fine not exceeding one hundred dollars or by imprisonment in the county jail for a term not exceeding ninety days, or by both such fine and imprisonment.

SECTION 2. This Ordinance shall take effect thirty days after its final passage and adoption, and within fifteen days after its adoption, a copy of same shall be published and circulated in the City of Shafter together with the names of the members of the City Council voting for and against the same.

PASSED AND ADOPTED this 19th day of March, 1991, by the following vote:

AYES: Gragg, Hiebert, Nash, Zachary and Prout

NAYS: None

ABSENT: None

ABSTENTIONS: None

Cathy L. Prout

Cathy L. Prout, Mayor

ATTEST:

Dolores Robinson

Dolores Robinson, City Clerk

APPROVED AS TO FORM:

John Brown S/S

John E. Brown, City Attorney

CERTIFICATION

I HEREBY CERTIFY that the foregoing Ordinance was passed and adopted by the City Council of the City of Shafter at a regular meeting thereof held on the 19th day of March, 1991.

Dolores Robinson, City Clerk

March 5, 1991

To Honorable Mayor and Members
of the Shafter City Council

WATER CONSERVATION PLAN

As staff indicated to the City Council on Feb. 19, a proposed water conservation plan has been prepared with a goal of reducing domestic water consumption within the City by 20 percent during the summer. There are several elements to the proposal, which are outlined below.

1. Amendment of the City's water use ordinance to more specifically define water uses that contribute to water wasting and which are presently restricted under the existing ordinance; and to include a specific procedure for enforcement of the ordinance. The proposed modifications include the following:

    * The City Manager or his designee will have the authority to implement a mandatory watering scheduled in the event of an extreme water shortage. According to the schedule, homes and businesses with even-numbered addresses will be permitted to water on even days of the month and those with odd-numbered addresses will be allowed to irrigate on odd days of the month.

    * Violators of the ordinance will be subject to a written warning and/or citation, at the discretion of the enforcing officer.

    * The City Manager or his designee will have the authority to restrict water flow to any premises that continues to waste water after having been warned and/or cited.

2. Preparation of an informational brochure to be distribute to all water users. The brochure will contain the contents of the amended ordinance, particularly the enforcement provisions, information on California's 5-year-old drought and how Shafter is affected, a message from the Mayor or City Council urging water users to conserve, and water-saving tips.

3. Distribution of information on water conservation to local restaurants, motels and other businesses, schools and other high-volume water users, urging their cooperation in the City's water conservation efforts.

MANAGEMENT REPORT 1

4. The City Council will be asked to issue a proclamation in April designating the month of May as **Water Awareness Month** in conjunction with a statewide campaign sponsored by the California Water Awareness Committee.

5. Booths will be set up at the Cinco de Mayo and Shafter Potato and Cotton Festivals in May to distribute information and answer questions on water conservation.

6. Submit news releases and story ideas to the local media in an effort to keep the public informed and encourage participation in the water conservation program.

RECOMMENDATION:

City Council approve the Water Conservation Plan as described above and introduce Ordinance No. 432 entitled AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SHAFTER AMENDING TITLE 8 OF THE SHAFTER MUNICIPAL CODE RELATING TO MISCELLANEOUS HEALTH REGULATIONS by title only and reading be waived.

Wade G. McKinney
City Manager

NOTICE OF PUBLIC HEARING AND AVAILABILITY

PROOF OF PUBLICATION

(2015.5 C.C.P.)
(GENERAL FORM)

STATE OF CALIFORNIA
County of Kern } ss.

I, the undersigned, am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a part of or interested in the above entitled matter. I am the chief clerk/publisher of *The Shafter Press*, a newspaper of general circulation, printed and published weekly, in the City of Shafter, County of Kern, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court order number 29926, of the County of Kern; that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and in any supplement thereof on the following dates, to-wit: July 27, August 3, 2011

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

(Signature)

Executed on 8-3-11
at Shafter, California

The *SHAFTER PRESS*
PO Box 1600
Shafter, CA 93263

Phone (661) 746-4942

PUBLIC NOTICE

CITY OF SHAFTER
NOTICE OF PUBLIC HEARING
2010 URBAN WATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that the City of Shafter is in the process of preparing its 2010 Urban Water Management Plan and is seeking public input. The Urban Water Management Plan will lay the foundation for meeting the City of Shafter's future water supply needs. A copy of the Draft 2010 Urban Water Management Plan is on the file at City Hall, 336 Pacific Avenue and is available for public review during normal business hours. In addition, an electronic version of the Draft 2010 Urban Water Management Plan is accessible at www.shafter.com.

NOTICE IS FURTHER GIVEN that the City Council of the City of Shafter at its meeting on Tuesday, August 16, 2011, at 7:00 p.m., will hold a public hearing in the Council Chambers located at 336 Pacific Avenue, Shafter, California pursuant to Water Code sections 10642 and 10608.26 to consider and receive comments and input on the City's Draft 2010 Urban Water Management Plan, to allow community input regarding the City's Implementation plan for complying with Part 2.55 of the Water Code (SBX7-7), to consider the potential economic impacts of the implementation plan, and to adopt a method pursuant to Water Code section 10608.20(b) for determining the City's urban water use targets. Public input from diverse social, cultural and economic elements of the population is encouraged and will be considered during the finalization of the 2010 Urban Water Management Plan.

Any written comments regarding the Draft 2010 Urban Water Management Plan must be submitted by the close of business on August 10, 2011 and should be sent to the Public Works Director at the address set forth above. Public comments can also be made or submitted at the public hearing at the time and place set forth above. Upon conclusion of the public hearing, the City Council may revise, change, modify and/or adopt the 2010 Urban Water Management Plan. For further information, please call the Public Works Director at (661) 746-5000.

Christine Wilson
City Clerk
Dated: July 20, 2011
Publish *Shafter Press* July 27, August 3, 2011.

COUNTY NOTIFICATION LETTERS

CITY OF SHAFTER

336 Pacific Avenue • Shafter, California 93263

May 31, 2011

County of Kern
Planning and Community Development
ATTN: LORELEI H. OVIATT, AICP, DIRECTOR
2700 "M" Street., Suite 100
Bakersfield, CA 93301-2370

Re: City of Shafter 2010 Urban Water Management Plan Update

Dear Ms. Oviatt:

The City of Shafter (City) wishes to inform you in accordance with Water Code section 10621(b) that the City is currently reviewing and revising its Urban Water Management Plan (UWMP) in accordance with the California Urban Water Management Planning Act and Part 2.55 of the California Water Code. An update is required every five (5) years.

A copy of the City's Draft 2010 UWMP will soon be available for review by the County and members of the public, and the City will be holding a noticed public hearing on the 2010 UWMP in advance of its proposed adoption. Public input and coordination with the County and other agencies is encouraged and will be considered during the completion of the City's 2010 UWMP. (Water Code §§ 10620(d)(2); 10621(b); 10642.)

Thank you for your interest and participation with regard to the City's 2010 UWMP update process. Should you have any questions or concerns, please feel free to contact City Public Works Director, Michael James at (661) 746-5002.

Sincerely,

John Guinn
City Manager

City Manager: (661) 746-5000 / Fax (661) 746-0607 • Finance: (661) 746-5001 / Fax (661) 746-1002
Planning/Building/Engineering: (661) 746-5002 / Fax (661) 746-9125 • www.shafter.com

CITY OF SHAFTER

336 Pacific Avenue • Shafter, California 93263

May 31, 2011

County of Kern
Office of the County Clerk
ATTN: ANN K. BARNETT
1115 Truxtun Avenue
Bakersfield, CA 93301-4639

Re: City of Shafter 2010 Urban Water Management Plan Update

Dear Ms. Barnett:

The City of Shafter (City) wishes to inform you in accordance with Water Code section 10621(b) that the City is currently reviewing and revising its Urban Water Management Plan (UWMP) in accordance with the California Urban Water Management Planning Act and Part 2.55 of the California Water Code. An update is required every five (5) years.

A copy of the City's Draft 2010 UWMP will soon be available for review by the County and members of the public and the City will be holding a noticed public hearing on the 2010 UWMP in advance of its proposed adoption. Public input and coordination with the County and other agencies is encouraged and will be considered during the completion of the City's 2010 UWMP. (Water Code §§ 10620(d)(2); 10621(b); 10642.)

Thank you for your interest and participation with regard to the City's 2010 UWMP update process. Should you have any questions or concerns, please feel free to contact City Public Works Director, Michael James at (661) 746-5002.

Sincerely,

John Guinn
City Manager

City Manager: (661) 746-5000 / Fax (661) 746-0607 • Finance: (661) 746-5001 / Fax (661) 746-1002
Planning/Building/Engineering: (661) 746-5002 / Fax (661) 746-9125 • www.shafter.com

COMMENTS RECEIVED

Shafter~Wasco Irrigation District

Board of Directors

Ken Paul, *President*
D.Mark Franz, *Vice President*
Samuel D. Frantz
Jerald R. Mozingo
Roger Riley

16294 Highway 43
P.O. Box 1168
Wasco, CA 93280

Business Office: (661) 758-5153
Fax: (661) 758-6167
Water Department: (661) 758-5369

General Manager
Jerry L. Ezell
Office Manager-Treasurer
Carolyn Waldrip
Legal Council
Ernest A. Conant
Scott K. Kuney

July 15, 2011

Michael James, Public Works Director
City of Shafter
336 Pacific Avenue
Shafter, CA 93263

Reference: Draft City of Shafter (City) 2010 Urban Water Management Plan (Plan)

Dear Mr. James

Thank you for the opportunity to comment on your draft City of Shafter (City) 2010 Urban Water Management Plan (Plan).

The Plan includes comments regarding Shafter-Wasco Irrigation District's (District) contribution to the City of Shafter's water supply. In reviewing your Plan, I would offer the following suggestions that may help clarify the relationship with the City of Shafter and the District as it relates to the water supply available to a major portion of the water usage in the City of Shafter.

1. The property owners in the City that overlay the Shafter-Wasco Irrigation District voted in 2010 to continue to help fund the maintenance and operation of the District through a 218 election.

2. The District since 1955 has had a contract through the Bureau of Reclamation which imported nearly 3,000,000 acre-feet of surface water delivered to Agricultural and M&I water users through in-lieu groundwater recharge in the basin to help offset groundwater pumping.

3. The District in 2010 signed a perpetual contract with the Bureau of Reclamation to insure a long term water supply to the area.

4. The District approved a Groundwater Management Plan AB 3030 in 2007.

5. You may also want to mention that the City is also a participant in the Poso Creek Water Management Group.

I only offer these as suggestions that may help reinforce the long term water supply available to the City. If you have any questions please do not hesitate to contact me at the District office.

Sincerely,

Jerry L Ezell

Jerry Ezell
General Manager

ADOPTION RESOLUTION

RESOLUTION NO. 2183

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SHAFTER TO ADOPT THE 2010 URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Urban Water Management Planning Act, Water Code section 10610 et seq. (the Act) mandates that every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare and adopt an updated Urban Water Management Plan (UWMP) at least once every five years on or before December 31, in years ending five and zero; and

WHEREAS, the City of Shafter (City) is an urban water supplier for purposes of the Act, and approved and adopted its most recent UWMP in 2005 and submitted that UWMP to the California Department of Water Resources (DWR); and

WHEREAS, the Water Conservation Act of 2009, Water Code section 10608 et seq. (SBX7-7), extended the time by which urban retail water suppliers must adopt their 2010 UWMPs to July 2011 and, among other things, established requirements for urban retail water suppliers to prepare urban water use targets in accordance with the goals of SBX7-7 to reduce statewide daily per capita water use 15 percent by the year 2015 and 20 percent by the year 2020; and

WHEREAS, the City is an "urban retail water supplier" for purposes of SBX7-7 because it directly provides potable municipal water to more than 3,000 end users; and

WHEREAS, in accordance with applicable law, including requirements of the Act and SBX7-7, the City has prepared its 2010 UWMP and has undertaken certain agency notification and coordination, public involvement and outreach, public comment, public notice, and other procedures in relation to its 2010 UWMP; and

WHEREAS, as authorized by Section 10620(e) of the Act, the City has prepared its 2010 UWMP with its own staff, with the assistance of consulting professionals, and in cooperation with other governmental agencies, and has utilized and relied upon industry standards and the expertise of industry professionals in preparing its 2010 UWMP, and has also in part utilized and relied upon the DWR Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan (March 2011) and the DWR Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (For the Consistent Implementation of the Water Conservation Act of 2009) (February 2011) in preparing its 2010 UWMP; and

WHEREAS, in accordance with applicable law, including Water Code sections 10608.26 and 10642, and Government Code section 6066, the City made its Draft 2010 UWMP available for public inspection, and caused to be published within the jurisdiction of the City at least two notices of the public hearing regarding the City's 2010 UWMP; and

WHEREAS, in accordance with applicable law, the City Council conducted a public hearing regarding the City's 2010 UWMP to, among other things, provide members of the public

and other interested entities with the opportunity to be heard in connection with the City's 2010 UWMP and the proposed adoption thereof; and

WHEREAS, pursuant to said public hearing on the 2010 UWMP, the City encouraged the active involvement of diverse social, cultural, and economic elements of the population within the City's service area with regard to the preparation of the 2010 UWMP, allowed input by members of the public and any other interested entities regarding all aspects of the 2010 UWMP, allowed community input regarding the City's implementation plan for complying with SBX7-7, considered the economic impacts of the City's implementation plan for complying with SBX7-7, and proposed the adoption of Method 1 under Water Code section 10608.20(b) for determining the City's urban water use targets as set forth in the 2010 UWMP; and

WHEREAS, the City Council has reviewed and considered the purposes and requirements and of the Urban Water Management Planning Act and SBX7-7, the contents of the 2010 UWMP, the documentation contained in the administrative record in support of the 2010 UWMP, information provided by City staff, and all public and agency input received with regard to the 2010 UWMP, and has determined that the factual analyses and conclusions set forth in the 2010 UWMP are supported by substantial evidence.

BE IT THEREFORE, RESOLVED by the City Council of the City of Shafter, as follows:

1. The City hereby adopts Method 1 under Water Code section 10608.20(b) for determining the City's urban water use targets as set forth in the 2010 Urban Water Management Plan, and the City's 2010 Urban Water Management Plan is hereby approved and adopted and ordered filed with the City Clerk.

2. The City Manager is hereby authorized and directed to include a copy of this Resolution in the City's 2010 Urban Water Management Plan and, in accordance with Water Code section 10644(a), to submit copies of the 2010 Urban Water Management Plan with the California Department of Water Resources, the California State Library, and any city or county within which the City provides water supplies within thirty (30) days of this adoption date.

3. The City Manager is hereby authorized and directed, in accordance with Water Code section 10645, to make the 2010 Urban Water Management Plan available for public review during normal business hours not later than thirty (30) days after filing a copy thereof with the California Department of Water Resources.

4. The City Manager is hereby authorized and directed, in accordance with Water Code section 10635(b), to provide that portion of the 2010 Urban Water Management Plan prepared pursuant to Water Code section 10635(a) to any city or county within which the City provides water supplies not later than sixty (60) days after filing a copy thereof with the California Department of Water Resources.

5. The City Manager is hereby authorized and directed to implement the components of the 2010 Urban Water Management Plan in accordance with the Urban Water Management

Planning Act and SBX7-7, including, but not limited to, the City's Demand Management Measures and its Water Shortage Contingency Plan.

6. The City Manager is hereby authorized and directed to recommend to the City Council additional steps necessary or appropriate to effectively carry out the implementation of the 2010 Urban Water Management Plan, the Urban Water Management Planning Act and SBX7-7.

PASSED AND ADOPTED this 16th day of August, 2011.

Garry Nelson, Mayor

ATTEST:

Carol Chavolla, Office Technician

CERTIFICATE OF GOVERNING BODY'S ACTION

STATE OF CALIFORNIA)
) ss.
COUNTY OF KERN)

I, Carol Chavolla, Office Technician of the City of Shafter, California, DO HEREBY CERTIFY that the above and foregoing Resolution of the City Council of the City of Shafter was duly passed and adopted at a Regular Meeting held on the 16th day of August, 2011, by the following vote:

AYES:	Alvarado, Colvard, Johnston, Nelson, and Prout.
NOES:	None.
ABSENT:	None.
ABSTAINING:	None.

DATED: August 16, 2011

(SEAL)

Office Technician of the City of Shafter