City of Lodi
2010 Urban Water Management Plan

FINAL

August 2011

RMC
Water and Environment

City of Lodi 2010 Urban Water Management Plan
Final

Prepared by:

RMC
Water and Environment

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List of Acronyms and Abbreviations

AB	Assembly Bill
Act	Urban Water Management Planning Act
AF	acre-feet
AFY	acre-feet annually or acre-feet per year
AWWA	American Water Works Association
B/C	benefit to cost
CCR	Annual water quality report distributed to customers in bill inserts
CCT	Central California Traction
CIMIS	California Irrigation Management Information Center
City	City of Lodi
CUWCC	California Urban Water Conservation Council
DBCP	dibromochloropropane
DHS	California Department of Health Services
DMM	demand management measure
DWR	California Department of Water Resources
EBMUD	East Bay Municipal Utility District
ERP	Emergency Response Plan
ETo	reference evapotranspiration
GAC	granular activated carbon
GBA	Northeastern San Joaquin County Groundwater Banking Authority
GMP	Groundwater Management Plan
gpcd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
Guidebook	"Guidebook to Assist Water Suppliers in the Preparation of a 2010 Urban Water Management Plan"
mgd	million gallons per day
MG	million gallons
MOU	Memorandum of Understanding
MSL	mean sea level
MTBE	Methyl-Tert-Butyl-Ether
NPCA	Northern California Power Agency
NPV	net present value
PCE	Tetrachloroethylene

RWMP	Recycled Water Master Plan
SB	Senate Bill
TCE	Trichloroethylene
TDS	total dissolved solids
ULFT	Ultra-Low Flush Toilet
UPRR	Union Pacific Railroad
USGS	United States Geological Survey
Utility	City of Lodi Water Utility
UV	ultraviolet
UWMP	Urban Water Management Plan
WEF	Water Education Foundation
WID	Woodbridge Irrigation District
WSWPCF	White Slough Water Pollution Control Facility

Chapter 1 Plan Preparation

This 2010 City of Lodi (City) Urban Water Management Plan (UWMP) was prepared in compliance with the Urban Water Management Planning Act, as amended by Assembly Bills 2661, 1869 and 11X (described below), and the Water Conservation Bill of 2009. It includes all information necessary to meet the requirements of California Water Code, Division 6, Part 2.6.

1.1 Background

1.1.1 Urban Water Management Planning Act

The Urban Water Management Act (Act) was created by Assembly Bill 797 (AB 797) which was signed into law by Governor Deukmejian on September 21, 1983. The Act requires that urban water suppliers (i.e. municipal water suppliers providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 AF annually) prepare and adopt Urban Water Management Plans containing certain specified elements.

The Act was amended by Assembly Bill 2661 (AB 2661), which was signed into law by Governor Deukmejian on July 18, 1990. AB 2661 deleted the January 1, 1991 termination date specified in AB 797. AB 2661 also expanded the elements which are to be addressed in Urban Water Management Plans.

The Act was also amended by Assembly Bill 1869 (AB 1869), which was signed by Governor Wilson on October 13, 1991. AB 1869 requires that urban water suppliers update (not just review) Urban Water Management Plans every five years to include projections of both potable and recycled water use, identify current reclamation practices, address additional alternative conservation measures, and describe findings, actions, and planning related to a number of water conservation and reclamation measures.

The Act was further amended by Assembly Bill 11X (AB 11X) signed by Governor Wilson on October 13, 1991. AB 11X requires that urban water suppliers prepare an Urban Water Shortage Contingency Plan as an amendment to its Urban Water Management Plan. Water Shortage Contingency Plans must be updated every five years and specify proposed measures for response to short and long term water shortages.

1.1.2 Water Conservation Bill of 2009

On November 10, 2009, the state legislature passed the Water Conservation Bill of 2009 (also referred to as SBX7-7) as a water conservation component to the Delta legislative package. The bill seeks a 20 percent statewide reduction in urban per capita water use in California by December 31, 2020. SBX7-7 requires that each retail agency preparing a 2010 UWMP to calculate baseline water use as well as an interim (for 2015) and final (for 2020) water use reduction target. The methodologies used to calculate both the baseline per capita water use and targets were outlined in the Draft and Final UWMP guidelines published by DWR in December 2010 and March 2011, respectively. To allow DWR time to develop the water use target methodologies, the deadline for UWMP adoption and submittal was extended to July 1, 2011.

1.2 Agency Coordination and Public Participation

1.2.1 Plan Preparation Coordination

The City of Lodi's primary source of water is groundwater. In addition to groundwater supplies, on April 16, 2003, the City Council approved the water sale agreement with Woodbridge Irrigation District (WID) to purchase up to 6,000 acre feet per year (AFY) of surface water from the Mokelumne River. The City is currently constructing a surface water treatment plant which will allow the use of the surface water. The

City consulted WID in the preparation of this plan regarding historical reliability of surface water supplies. The City also sent WID notice of intention to adopt and a copy of the draft plan.

Currently, groundwater is the sole source of supply for the City's water distribution system, using 26 wells drawing from the San Joaquin Valley Groundwater Basin. The City is a member of the Northeastern San Joaquin County Groundwater Banking Authority (GBA). Through involvement in GBA, the City works together with a number of water agencies in the surrounding area to develop regional solutions for groundwater management. The City coordinated the preparation of this UWMP with GBA through notification of the UWMP update process and by providing a copy of the Draft 2010 UWMP for review. GBA was also sent a notice of intention to adopt, a copy of which is included in **Appendix A**.

By coordinating with neighboring water agencies through GBA, the City will ensure that its groundwater supply needs, as outlined in this UWMP, will be incorporated into regional groundwater management efforts.

Table 1-1: Coordination with Appropriate Agencies (Guidebook Table 1)

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	Not involved / No information
Other water suppliers							
Woodbridge Irrigation District				x	x	x	
Water management agencies							
Groundwater Banking Authority					x	x	
Relevant public agencies							
San Joaquin County					x	x	
General public			x				

1.3 Plan Adoption, Submittal, and Implementation

This 2010 UWMP serves as an update to the City's 2005 UWMP. The City's UWMP was first developed in 1990, and addressed water supply and demand for the City. Plan updates have occurred every five years since then. With each update, additional elements have been added in addition to updating previous estimates of water supply and demand. These new elements have included water supply alternatives, recycled water use, water conservation programs, and a water shortage contingency plan. The most notable addition in the 2010 plan is the development of urban water use targets for 2015 and 2020 consistent with the requirements of the Water Conservation Bill of 2009.

1.3.1 City and County Notification and Participation

San Joaquin County was sent a notification letter that the 2010 UWMP was under preparation, a draft of the UWMP and a notice of intention to adopt. These can be found in **Appendix A**.

1.3.2 Public Participation

The City encouraged public participation in the development of the 2010 UWMP and provided opportunities for public review and comment. In January 2011, the City posted an announcement of the 2010 UWMP update on its website. The City also included a statement on utility bills during the month of

February (2/1/11 to 3/2/11) notifying customers of the update and providing contact information for more details.

In June 2011, the City placed a public notice on its website stating that its UWMP was being updated and that a public review period would be provided to address comments and concerns from members of the community. The notice stated that the public review period would be scheduled from June 3 through August 3, 2011. A copy of this notice is included in **Appendix B**. The notice, as well as the Draft 2010 UWMP, was made available for public inspection on the City's website and at the City Clerk's office. On August 3, 2011, the City conducted a public hearing to receive comments from the public regarding the UWMP. This hearing provided an opportunity for the City's customers/residents and employees in the area to learn about the water supply situation and the plans for providing a reliable, safe, high-quality water supply for the future. Information regarding the public hearing and the public review period is included in **Appendix B**. This UWMP was finalized after the public review period and was placed on the City's website.

1.3.3 Plan Adoption and Implementation

The City prepared this 2010 UWMP Update during the winter and spring of 2011. The plan was adopted by its City Council on August 3, 2011 and was submitted to the California Department of Water Resources within 30 days of the council approval as required by California Water Code Section 10644(a). See Appendix C for a copy of the resolution. The 2010 UWMP was also sent to the California State Library.

The City will implement this UWMP, including the Water Demand Reduction Plan outlined in Section 3.9, in accordance with the requirements established in the Urban Water Management Planning Act of 1983, as amended, and the Water Conservation Act of 2009.

1.3.4 Other Agencies

Upon completion, this UWMP was submitted to the following agencies not listed above:

- California Department of Public Health
- California State Library
- Lodi Public Library
- Northeastern San Joaquin County Groundwater Banking Authority
- San Joaquin County

Chapter 2 System Description

2.1 Service Area Physical Description

The City of Lodi is located in the Northern San Joaquin Valley in San Joaquin County and borders the Mokelumne River. The bulk of the City's geographical area extends from the Mokelumne River on the north, Woodbridge Irrigation District's South Main Canal and Lower Sacramento Road on the west, Harney Lane on the south, and portions of Highway 99 and Central California Traction (CCT) Railroad on the east. The City's White Slough Water Pollution Control Facility (WSWPCF) lies approximately six miles to the southwest of the City. The City has an estimated 2010 population of 63,549 (Department of Finance).

The City of Lodi Water Utility (Utility) is the sole water purveyor for the City of Lodi. The Utility's service area is contiguous with the City boundaries and covers approximately 12 square miles. There are a few minor connections outside the City. The service area includes a mix of residential, commercial, and industrial land use, and is characterized by essentially flat terrain. All future development being considered for the City is expected to occur within the present service area. The City is not a wholesale supplier and does not sell water outside its service area.

2.2 Climate

The City has cool, humid winters, and hot, dry summers. Temperatures average 60°F annually, ranging from average winter morning lows in the upper 30's to average summer afternoon highs in the upper 80's/low 90's (Western Regional Climate Center, 2010). Relative humidity ranges from 91 percent in winter months to 26 percent in summer months. During summer months, temperatures may exceed 100˚F, affecting water demands significantly. Annual rainfall averages approximately 17 inches, with most rainfall occurring between November and April. The combination of warmer temperatures and low precipitation during the summer results in peak water demands during that period. Reference evapotranspiration (ET_o) values, which serve as indicators of how much water is required to maintain healthy agriculture and landscaping, range from 0.79 inches during December to 7.87 inches in July. Temperature, rainfall and evapotranspiration averages for the City are presented in **Table 2-1**.

Table 2-1: Service Area Climate (Guidebook Table 2)

Month	January	February	March	April	May	June
Average ET_o[a] (in)	0.79	1.55	3.28	5.17	6.58	7.51
Average Rainfall[b] (in)	3.43	2.94	2.71	1.3	0.61	0.15
Average Temperature[b] (^oF)	45.65	50.1	53.75	58.5	64.25	69.9

Table 2-1 (Continued)

Month	July	August	September	October	November	December	Annual
Average ETo (in)	7.87	6.85	5.11	3.29	1.54	0.76	50.30
Average Rainfall (in)	0.03	0.04	0.27	0.93	1.93	2.92	17.23
Average Temperature (^{o}F)	73.55	72.2	69.3	62	52.35	45.7	59.8

Footnotes:

a. California Irrigation Management Information System (CIMIS).
b. Western Regional Climate Center.

2.3 Service Area Population

Currently, the City's population is approximately 63,549. For the purpose of this report, the City's assumed annual population growth rate has been revised from 1.5%, as reflected in the 2005 UWMP Update, to 1.0%. Since the last UWMP update in 2005, the City of Lodi growth rate has been less than 1.0%. This assumption is supported by the following data available from the California Department of Finance:

- Growth rate for the City of Lodi between 2010 and 2011 is projected to be 0.6%.
- The growth rate for California has varied between 0.91% and 1.33% Statewide over the past five years).

These growth factors seem to have been affected by the economic downturn and until the economy recovers, the City considers its projection of 1.0% growth to be a conservative estimate. Population projections from 2010 to 2035 are presented in **Table 2-2**.

Table 2-2: Population – Current and Projected

	2010	2015	2020	2025	2030	2035
Service area population[a]	63,549	66,791	70,198	73,778	77,542	81,497

Source: Department of Finance for 2010 population. 2015-2030 populations estimated assume 1.0% annual growth rate.

Chapter 3 System Demands

Water demand projections provide the basis for sizing and staging future water supply facilities. Water use and production records, combined with projections of population and urban development, provide the basis for estimating future water requirements. This chapter presents a summary of available demographic and water use data and the resulting projections of future water needs for the City.

3.1 Overview of Water Use

Records of historical water production were obtained from the City's Public Works Department. Water production is the volume of water measured at the source, which includes all water delivered to residential, commercial, and public authority connections, as well as unaccounted-for water.

Daily water demand fluctuates throughout the year, due primarily to seasonal climate changes. Water demands are significantly higher in the summer than the winter. Residential use makes up the majority of use within the City (approximately 70%), with commercial, governmental, institutional and industrial uses accounting for less than 30% of the City's water use. Per capita water use and water use by customer type are discussed in detail later in this section.

3.2 Water Use Baselines and Targets

The Water Conservation Bill of 2009 requires individual retail water suppliers to set water conservation targets for 2015 and 2020 to support an overall state goal of reducing urban potable per capita water use by 20% by 2020. Individual supplier conservation targets must be determined using one of four methods that are based upon a baseline of use that is calculated using the specific guidelines described in DWR's *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan* (March 2011).

3.2.1 Base Period Ranges

The base period ranges described in **Table 3-1** were used to develop the baseline water usage.

Table 3-1: Base Period Ranges (Guidebook Table 13)

Base	Parameter	Value	Units
10- to 15-year base period	2008 total water deliveries	17,171[a]	*AFY*
	2008 total volume of delivered recycled water	*0*[a]	*AFY*
	2008 recycled water as a percent of total deliveries	*0%*[a]	percent
	Number of years in base period	10	years
	Year beginning base period range	1997	
	Year ending base period range	2006	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2004	
	Year ending base period range	2008	

Footnote:

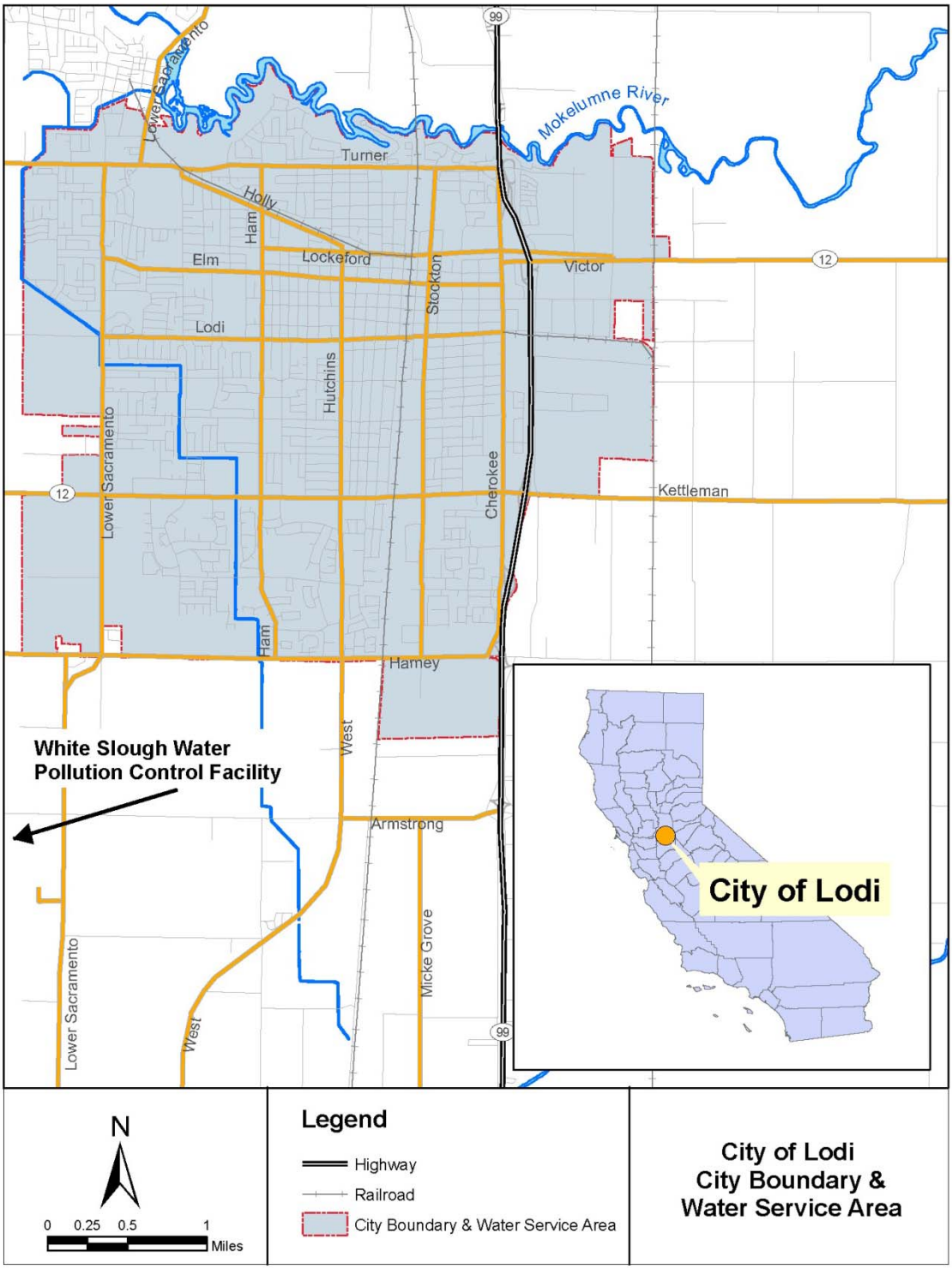
a. The City used 1,642 AFY of recycled water in 2008 in the vicinity of the WSWPCF. Consistent with DWR guidelines, this has been excluded from calculations when evaluating baseline water use. These areas would not have otherwise utilized potable water.

3.2.2 System Area and Population

The City of Lodi's system area is contiguous with the City boundaries and has undergone some change since the 2005 UWMP with the addition of three annexation areas totaling approximately 600 acres.

Population and demand projections in the 2010 UWMP reflect these annexations. The City's boundaries are shown in **Figure 3-1**.

Figure 3-1: City Boundary and Water Service Area



3.2.3 Gross Water Use

Gross water use for each year within the base year range was provided by the City of Lodi. The gross water use was calculated using DWR's Methodology 1 and was based on the City's metered groundwater production. The City maintains approximately 1.1 million gallons of daily operational storage in the distribution system. There is no significant change in storage in the system on a yearly basis.

The City does utilize treated recycled water for agricultural irrigation around the wastewater treatment plant, and tertiary treated recycled water for a natural gas-powered generator and fish pond replenishment. Since those recycled water users were never intended to utilize potable water, they are not offsetting potable demand and were not included in the gross water use for purposes of calculating a baseline per capita demand.

Since the City did not import or export any water, or operate any water storage reservoirs during the base year range, gross water use for the base year range is equal to groundwater production.

3.2.4 Baseline Per Capita Demand

An annual per capita use was determined by dividing the gross water produced by the City's population. As the City does not use recycled water to offset potable demands, a continuous 10-year period is required to calculate the baseline per capita water use. A final gross water use is calculated by taking the average per capita use for all years within the 10 year base range. The baseline daily per capita water use for the 10-year range and the 5-year range are summarized in **Table 3-2** and **Table 3-3**, respectively.

Table 3-2: Base Daily Per Capita Water Use – 10-Year Range (Guidebook Table 14)

Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	1997	54,700	14.6	267
Year 2	1998	55,681	12.9	232
Year 3	1999	56,926	14.8	260
Year 4	2000	57,011	14.9	262
Year 5	2001	58,350	15.3	262
Year 6	2002	59,782	14.9	248
Year 7	2003	60,876	14.4	237
Year 8	2004	61,764	15.2	246
Year 9	2005	62,347	14.7	236
Year 10	2006	62,507	14.6	233
Base Daily Per Capita Water Use				248

Table 3-3: Base Daily Per Capita Water Use – 5-Year Range (Guidebook Table 15)

Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	2004	61,764	15.2	246
Year 2	2005	62,347	14.7	236
Year 3	2006	62,507	14.6	233
Year 4	2007	62,826	15.3	243
Year 5	2008	63,050	15.3	243
Base Daily Per Capita Water Use				240

3.2.5 Water Usage Targets

The four allowable methods for calculating water use targets are:

- Method 1: 80% Base Daily Per Capita Use
- Method 2: Performance standards
- Method 3: 95% of the DWR hydrologic region per capita use target
- Method 4: Applying savings by water sector

The City chose to use Method 1 for calculating its water use target. This target was compared against DWR's maximum allowable target, which is equal to 95% of the City's base per capita use shown in **Table 3-3**. The City's interim and final water usage targets are summarized in **Table 3-4**.

Table 3-4: City of Lodi Water Usage Targets

Interim (2015)	Final (2020)	Maximum Allowable Target
223 gpcd	199 gpcd	228 gpcd

3.3 Water Demands

Records of historical water production were obtained from the City's Public Works Department. Water production is the volume of water measured at the source, which includes all the City's wells. Since most of the City is not currently metered, water demands were based on the City's well production. As no other supplies are used in the City, total water production will therefore include water delivered to residential, commercial, industrial, and public authority connections, as well as unaccounted-for water.

3.3.1 Existing Water Demands

Water use by customer class can only be estimated as not all of the City's residential customers and commercial customers are currently metered. Water usage estimates were based on 2010 metered data and overall 2010 water usage measured as production volumes. For the purposes of estimating the distribution of water use by customer class, currently unmetered commercial, industrial, and institutional customers were assumed to use water at the same rate as metered commercial, industrial, and institutional customers. This is a simplifying assumption that is consistent with the 2005 UWMP and does not affect estimates of future water demands, which are based on population. Multi-family residential customers were assumed to use water at 75% of the rate of single-family residential customers.

3.3.2 Projected Water Demands

Future water demand estimates are based on the following assumptions:

1) a constant 1.0 percent annual increase in the City's demand (correlating to a similar annual increase in population),
2) a constant 1.0 percent annual increase in the number of service connections for each connection type,
3) residential customer metering according to the City's Water Meter Program phasing schedule,
4) all commercial customers metered between 2015 and 2020, and
5) the City is successful in achieving its gpcd targets through implementation of the water use reduction plan described in Section 3.9.

Demands were projected based on actual water use in 2010 as measured by production rates at the City's well sites. By 2035, average annual water demands are expected to have increased from current demands by approximately 20 percent, from about 15,000 AFY (13.4 mgd) in 2010 to 18,200 AFY (16.3 mgd) in 2035. Demand projections by water use sector are presented in **Table 3-5.**

The projections in **Table 3-5** represent normal (average) conditions, as actual use varies based on a number of factors. For this reason, it can be expected that there will be variations in the City's future water usage. The values predicted in these tables have been used in this UWMP as they are assumed to represent average conditions of water demand.

Table 3-5: Past, Current, and Projected Water Use by Customer Class (Guidebook Tables 3 - 7)

Year	Customer Class	Metered Connections[a]	Metered Deliveries, AFY[b]	Unmetered Connections[a]	Unmetered Deliveries, AFY[b]	Total Number of Connections	Total Deliveries, AFY[c]
2005	SFR	0	0	16,503	9,673	16,503	9,673
	MFR	0	0	5,909	2,598	5,909	2,598
	Commercial/Institutional/ Governmental	1,018	2,454	289	697	1,307	3,150
	Industrial	56	780	0	0	56	780
	Landscape	23	273	0	0	23	273
	TOTAL [d]	**1,100**	**3,500**	**22,700**	**13,000**	**23,800**	**16,500**
2010	SFR	0	0	16,659	8,482	16,659	8,482
	MFR	0	0	5,677	2,168	5,677	2,168
	Commercial/Institutional/ Governmental	1,069	2,476	259	600	1,328	3,075
	Industrial	55	988	0	0	55	988
	Landscape	23	292	0	0	23	292
	TOTAL [d]	**1,100**	**3,800**	**22,600**	**11,200**	**23,700**	**15,000**
2015	SFR	13,526	6,886	4,999	2,545	17,946	9,432
	MFR	3,301	1,260	2,666	1,018	6,116	2,278
	Commercial/Institutional/ Governmental	1,137	2,633	259	600	1,431	3,232
	Industrial	58	1,038	0	0	59	1,038
	Landscape	24	307	0	0	25	307
	TOTAL [d]	**18,000**	**12,100**	**7,900**	**4,200**	**25,600**	**16,300**

Year	Customer Class	Metered Connections[a]	Metered Deliveries, AFY[b]	Unmetered Connections[a]	Unmetered Deliveries, AFY[b]	Total Number of Connections	Total Deliveries, AFY[c]
2020	SFR	18,402	8,639	0	0	19,333	8,639
	MFR	6,271	2,208	0	0	6,588	2,208
	Commercial/Institutional/ Governmental	1,467	3,397	0	0	1,541	3,397
	Industrial	61	1,091	0	0	64	1,091
	Landscape	25	323	0	0	27	323
	TOTAL [d]	**26,200**	**15,700**	**0**	**0**	**27,600**	**15,700**
2025	SFR	19,341	9,080	0	0	20,828	9,080
	MFR	6,591	2,321	0	0	7,098	2,321
	Commercial/Institutional/ Governmental	1,542	3,571	0	0	1,660	3,571
	Industrial	64	1,147	0	0	69	1,147
	Landscape	27	339	0	0	29	339
	TOTAL [d]	**27,600**	**16,500**	**0**	**0**	**29,700**	**16,500**
2030	SFR	20,327	9,543	0	0	22,437	9,543
	MFR	6,927	2,439	0	0	7,646	2,439
	Commercial/Institutional/ Governmental	1,620	3,753	0	0	1,789	3,753
	Industrial	67	1,205	0	0	74	1,205
	Landscape	28	356	0	0	31	356
	TOTAL [d]	**29,000**	**17,300**	**0**	**0**	**32,000**	**17,300**
2035	SFR	21,364	10,029	0	0	24,171	10,029
	MFR	7,280	2,563	0	0	8,237	2,563
	Commercial/Institutional/ Governmental	1,703	3,944	0	0	1,927	3,944
	Industrial	71	1,267	0	0	80	1,267
	Landscape	29	375	0	0	33	375
	TOTAL [d]	**30,400**	**18,200**	**0**	**0**	**34,400**	**18,200**

Footnote:

a. Meter connections for residential connections based on the City's current Water Meter Program phasing plan. Currently unmetered commercial connections assumed to be metered between 2015 and 2020.

b. Assumes the per-connection demand factor for MFR connections is 75% of the unit demand factor for SFR connections.

c. Does not include recycled water use in the vicinity of the WSWPCF.

d. Rounded to the nearest hundred.

3.4 Sales to Other Agencies

The City does not currently sell water to any other agency, nor, at the present time, does the City foresee any opportunities for sales to other agencies.

3.5 Additional Water Uses and Losses

Other water uses and losses in the City's service area are presented in **Table 3-6**, below. The 1,642 AFY shown for recycled water in 2010 includes the amount of water currently used to irrigate the City land application area in the vicinity of WSWPCF. Although the land was never considered for irrigation from potable water supplies, the 1,642 AFY must be subtracted from the total amount of wastewater available to the City for reclamation and reuse in municipal applications. For the purposes of this UWMP, therefore, the 1,642 AFY is subtracted from available recycled water when evaluating available water supplies, but not included during calculation of water usage targets.

System losses include unmetered water use, such as water use for fire protection and training, system and hydrant flushing, sewer cleaning, system leaks, and unauthorized connections. For the purposes of this UWMP, system losses were assumed to be approximately 10 percent of total water production. Because water usage is measured at the City's wells, these system losses are incorporated into the water usage estimates summarized in Table 3-5 above (i.e. it should not be added to the demands in Table 3-5).

Table 3-6: Additional Water Uses and Losses (Guidebook Table 10)

Water use	2005	2010	2015	2020	2025	2030	2035
Recycled water[a]	2,500	1,642	2,842	2,842	2,842	2,842	2,842
System losses[b]	1,647	1,501	1,629	1,566	1,646	1,730	1,818
Total	4,147	3,142	4,471	4,408	4,487	4,571	4,700

Footnote:

a. Includes existing recycled water uses around the plant and 1,200 AFY promised by the City to Northern California Power Agency when construction of the new power plant is complete.

b. Table 3-5. Should not be added when calculating total demands.

3.5.1 Technical and Economic Feasibility

Recycled water uses summarized in **Table 3-6** include only existing uses and uses that have already been determined to be technically and economically feasible. In addition to the 1,642 AFY that are currently being used around the WSWPCF, 1,200 AFY will be provided to Northern California Power Agency (NCPA) when its power plant (which is currently under construction) is completed. The City has an agreement with NCPA to serve up to 1,800 AFY of recycled water to the plant. The Agreement is included in **Appendix D**.

3.6 Total Demands

The City's total average annual demands are presented in **Table 3-7**. It should be noted that total water deliveries includes system losses, as these deliveries are estimated based on current groundwater production.

Table 3-7: Total Water Use (Guidebook Table 11)

Water Use	2005	2010	2015	2020	2025	2030	2035
Total water deliveries[a]	16,473	15,005	16,288	15,658	16,457	17,296	18,178
Sales to other water agencies[b]	0	0	0	0	0	0	0
Additional water uses and losses[c]	2,500	1,642	2,842	2,842	2,842	2,842	2,842
Total	18,973	16,647	19,129	18,500	19,298	20,138	21,020

Footnote:

a. From demand projections in Table 3-5. Note that this table incorporates system losses in demand estimates.
b. The City does not foresee any water sales to other agencies.
c. Includes recycled water uses only.

3.7 Estimated Demands for Lower-Income Housing Projects

The Water Code Section 10631.1(a) requires suppliers to estimate projected water use for single-family and multi-family residential housing needed for lower income households, as identified in the Housing Element of the General Plan for the service area of the supplier. It does not require quantification of current water use by lower income households. Lower income refers to a household earning less than 80 percent of the annual median income for San Joaquin County, as adjusted by household size. According to the 2010 Housing Element, an estimated 41% of households in the City of Lodi are lower income. According to the Housing Element, the City of Lodi's Regional Housing Need Allocation for 2007 through 2014 for lower income housing is 1,621 units.

The Regional Housing Need Allocation does not break down the housing need by housing type (single-family vs. multi-family). Therefore, the projected water demand for lower income housing was conservatively estimated based on the average 2010 water demands for single-family residential customers, 0.51 AF/yr per household. This estimate is considered conservative because multi-family residential housing uses less water on a per unit basis than single-family housing. This demand is incorporated in overall demand projections in this UWMP.

Table 3-8: Low-Income Projected Water Demands (Guidebook Table 8)

Low Income Water Demands	2015	2020	2025	2030	2035
All new units are single-family residential[a]	830 AF	Not available[b]	Not available[b]	Not available[b]	Not available[b]

Footnote:

a. 2015 Estimate based on RHNA for 2007-2014 of 1,621 units. Demand based on actual average single-family unit demand in 2010.
b. Future Housing Elements will address needs for 2015 and beyond. Per direction from DWR, projection of water use by units in future housing elements is not required.

3.8 Wholesale Water Demand Projections

The City of Lodi does not provide any water to other retail agencies or wholesale water suppliers, so no demand projections from or to other agencies are applicable.

3.9 Water Use Reduction Plan

This section describes the City of Lodi's plan to achieve the water use reductions necessary to meet the per capita water use targets, consistent with the Water Conservation Bill of 2009. The urban water use targets and how they were calculated are described in Section 3.3, above. The interim 2015 target is 223

gallons per capita daily (gpcd) and the 2020 target is 199 gpcd. The actual usage in 2010 was 211 gpcd; therefore the City is currently meeting the interim target.

3.9.1 Water Meter Program

The City's primary means for achieving and sustaining the urban use targets is through its Water Meter Program. Over the next several years, the City will install water meters on all unmetered water service connections. As part of this Program, usage-based water rates will be implemented. In July 2010, the City Council approved new usage-based water rates to be implemented starting in January 2011. The new usage-based water rate structure for single family customers includes a fixed service charge based on the size of the water meter, and a three-tier usage rate structure intended to help encourage water conservation.

Approximately 3,000 single family customers were converted to these rates in 2011 and each year during the meter retrofit program, additional customers will be converted to the usage-based water rates. It is estimated that all single family residential customers will be transitioned to usage-based water rates by January 2017. Prior to converting any customer to usage-based rates, the City will provide the customer with one (1) year of actual water usage data and information regarding how the customer's bill may be affected with the change in billing.

Implementation of the water meter program includes a substantial customer outreach component. As part of the Program, the City is publishing a quarterly Water Meter News community newsletter that provides updates on the Program. In addition, the City has created a website for the Program, with a link on the City's home page, and designated a Water Meter Program Administrator to respond to customer questions. Examples of the newsletter and screen captures from the website are included in **Appendix E.**

The California Urban Water Conservation Council estimates that metering with volumetric pricing reduces demand by an average of 20 percent (CUWCC 2003). A study conducted in Davis, CA found an average reduction in water use of 18 percent due to the addition of meters with "associated publicity." The study also found higher percent savings for high use customers Maddaus (2001). The City is currently meeting its interim water usage target. If these savings from metering are at least partially achieved, the City should meet its final water usage target.

3.9.2 Conservation Outreach

In addition to the Water Meter Program and associated customer outreach, the City of Lodi also encourages conservation and sustainable water use through ongoing customer outreach. The City's website has a Sustainable Water Use guide (http://www.lodi.watersavingplants.com/) that includes water saving tips for both indoor and outdoor use, a native plant guide, and an interactive plant selection tool. The site is updated regularly with community events, such as classes on gardening and drought tolerant landscaping.

The City of Lodi also employs four part-time Water Conservation Officers. These officers patrol the City to locate water waste (such as water leaks, over watering, or violation of watering days/hours, etc). When water waste is observed, in addition to enforcing the Water Conservation Ordinance, the officers assist in educating the public on water conservation regulations and conservation methods. If the water waste is due to a failure in the water distribution system, the officer's work with the Water Department to ensure the failure is addressed promptly. Water conservation officers also assist with the City Water Conservation Watering Guide website.

3.9.3 Potential Economic Impacts

Water Code Section 10608.26 requires urban retailers to consider potential economic impacts that may result from water use reductions. Between 2008 and 2010, the City undertook a significant financial planning exercise for the water and wastewater utility to help guide the City in dealing with a number of water and wastewater financial issues including the implementation of usage-based water rates and the

financing of the new water treatment plant. The financial planning included development of a 10-year financial model that incorporates current and estimated future revenues, operating and maintenance expenses, debt service obligations, capital improvement plans, and financial reserves. The model continues to be used to evaluate financial issues, revenue needs, and the potential impacts of potential funding strategies and other factors such as water use reductions.

The financial model and the development of usage-based water rates include an assumption of a 10 percent reduction in overall water usage as a result of metering, usage-based billing, and customer outreach. This is consistent with meeting the urban water use targets. At current (2009 and 2010) demand levels, a 10 percent reduction in overall demand would achieve the per capita urban water use targets. The actual change in water demand resulting from water meters and usage-based billing may be more or less than this assumption. The City plans to carefully monitor water usage patterns throughout the meter retrofit program. Because only a percentage of residential customers will be converted to usage-based billing in any single year, the potential revenue uncertainty is limited. This transition period also occurs during a period when the water utility has financial reserves, which could buffer the impact of any unanticipated revenue shortfalls, should they occur.

In terms of economic impacts to customers, typical customers will see higher water bills during peak summer months and lower bills during winter months when water usage tends to be lower. The rate structure was designed to be revenue neutral. Many customers will experience lower overall costs for water service under usage-based water rates. Prior to being converted to usage-based billing, the City plans to provide each customer with a multi-month history of actual water usage, as well as comparison bill information showing how water bills under the usage-based billing compare with flat rate billing.

3.9.4 Water Use Reduction Progress Reporting

Water Code Section 10608.40 requires urban retailers to report progress towards meeting urban water use targets. Per this code section, DWR is responsible for developing a standardized form for use in reporting. To this end, the City will prepare and submit to DWR, as required, the to-be-developed standardized form reporting on their progress in meeting their 2015 and 2020 goals.

Chapter 4 System Supplies

This chapter describes the current and future water supplies available to the City.

4.1 Overview of Water Sources

The City currently uses groundwater as its primary source of supply. In 2003, the City entered into an agreement with Woodbridge Irrigation District (WID) to purchase up to 6,000 AFY of surface water, and a water treatment plant is currently under construction to treat the water for distribution. The treatment plant is anticipated to be online in 2012. Limited recycled water is used in the vicinity of WSWPCF primarily for City-owned agricultural fields and at power-generating facilities owned by NCPA. The current and projected water supplies are summarized in **Table 4-1**. These supplies are described below.

Table 4-1: Water Supplies – Current and Projected (AFY) (Guidebook Table 16)

Water Supply Sources		2010	2015	2020	2025	2030	2035
Water purchased from:	Wholesaler supplied volume (yes/no)						
Woodbridge Irrigation District	yes	0	6,000	6,000	6,000	6,000	6,000
Supplier-produced groundwater		15,005	15,000	15,000	15,000	15,000	15,000
Recycled Water		7,095	7,861	8,262	8,683	9,126	9,592
Total		22,100	28,861	29,262	29,683	30,126	30,592

4.2 Wholesale Supplies

In May 2003, the City entered into an agreement with Woodbridge Irrigation District to purchase 6,000 acre-feet per year of surface water from the Mokelumne River (via WID canal facilities) for a period of 40 years. An amendment approved in January 2008 extended the agreement to 2047. The agreement has been included in **Appendix F**. Key provisions in the agreement include:

- Provisions allowing the City to "carryover", or bank, water that is not used during the first seven years of the agreement (until October 2010) for use later, as water supplies are available. A maximum of 42,000 acre-feet can be banked. Note that this banked water is not physically stored, rather it is agreed that WID will supply the banked water to Lodi when excess water is available.
- During dry years when WID's supply is reduced, the City's allotment can be reduced down to 3,000 AFY. The City would add the remaining 3,000 AFY to its banked water described above for use when water is available. Water banked due to reduction in dry years expires if not used within 8 years from the period it is banked.
- Diversion of the water from the Mokelumne River is permitted only from March 1 through October 15. However, an agreement with East Bay Municipal Utilities District (EBMUD) will allow release of up to 1,000 acre-feet between October 15 and the end of February. This will allow year-round operation of the surface water treatment plant and facilitate the usage of banked water.
- If the City purchases additional water from another wholesaler on the Mokelumne River, WID's conveyance canals can be utilized at a cost of $20 per acre-foot. If additional water is available from WID, the City can purchase that at a cost of $100 per acre-foot.

The City has not yet begun using this water. A surface water treatment plant is currently under construction; the plant is anticipated to be operational in 2012. The City will begin using the water after completion of the surface water treatment plant. The City's banked supply is currently at its maximum

potential allotment of 42,000 acre-feet. As noted above, this banked supply is not stored, but will be made available to the City when WID has excess supply. The City will seek opportunities to utilize the banked supply after the water treatment plant is commissioned. The projected supplies are summarized in **Table 4-2**; these numbers reflect the City's current plans for use of these WID supplies, however, the overall supply volume may increase if and when the City decides to use its banked supply. The magnitude and availability of banked supply to be delivered will be discussed with WID at an appropriate time(s) in the future.

Table 4-2: Wholesale Supplies – Existing and Planned Sources of Water (AFY) (Guidebook Table 17)

Wholesale sources	Contracted Volume	2015	2020	2025	2030	2035
Woodbridge Irrigation District	6,000	6,000	6,000	6,000	6,000	6,000

4.3 Groundwater Supply

The City overlies the Eastern San Joaquin Subbasin of the San Joaquin Valley Groundwater Basin. This groundwater basin is not adjudicated and is currently managed under the Eastern San Joaquin Groundwater Basin Groundwater Management Plan. The groundwater in the Lodi area exists under unconfined and semi-confined conditions. The Mehrten Formation is the most productive fresh water-bearing unit underlying the City.

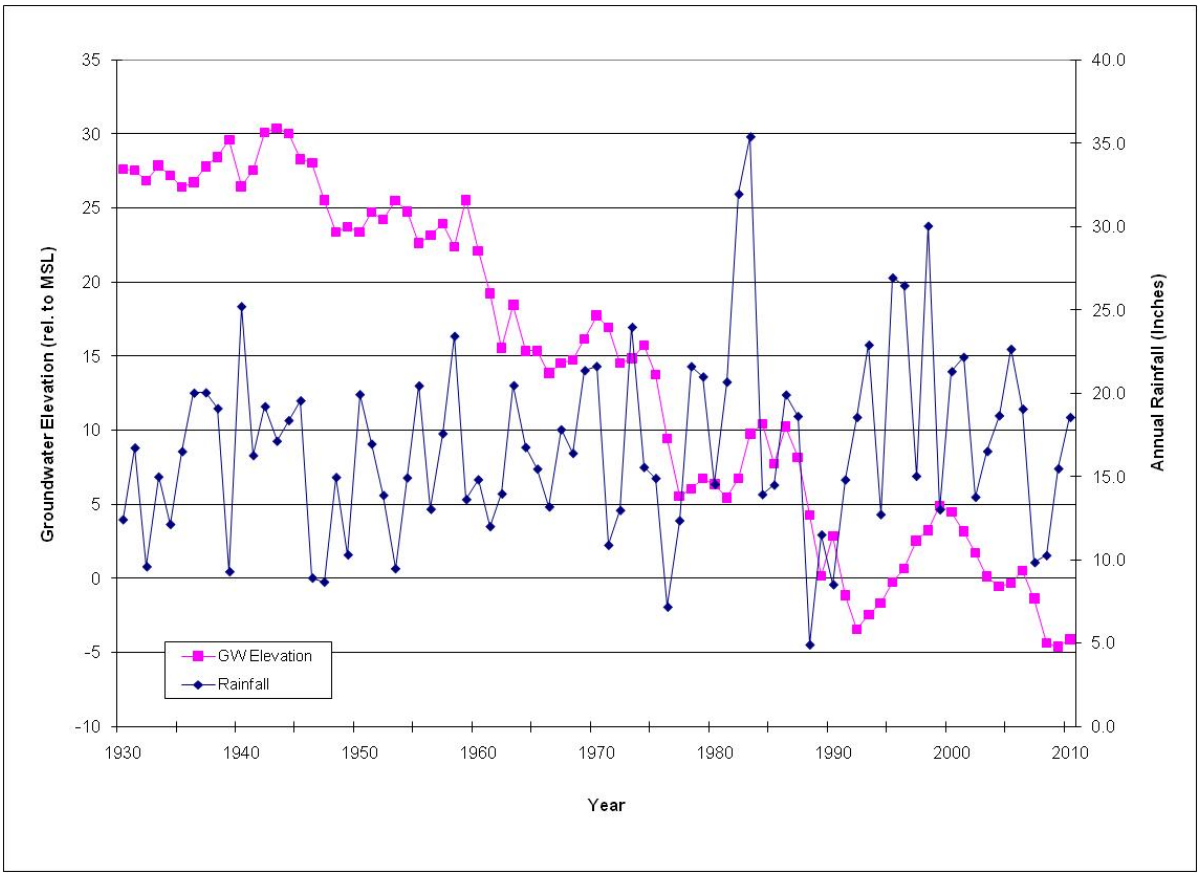
The San Joaquin Valley comprises the southernmost portion of the Great Valley Geomorphic Province of California. The Great Valley is a broad structural trough bounded by the tilted block of the Sierra Nevada on the east and the complexly folded and faulted Coast Ranges on the west. The Eastern San Joaquin Subbasin is defined by the areal extent of unconsolidated to semiconsolidated sedimentary deposits that are bounded by the Mokelumne River on the north and northwest; San Joaquin River on the west; Stanislaus River on the south; and consolidated bedrock on the east. Sediments of the San Joaquin Valley consist of interlayered gravel, sand, silt, and clay derived from the adjacent mountains and deposited in alluvial-fax, floodplain, flood-basin, lacustrine, and marsh environments. Hydrogeologic units in the San Joaquin Basin include both consolidated rocks and unconsolidated deposits. The consolidated rocks include 1) the Victor Formation, 2) the Laguna Formation, and 3) the Mehrten Formation. The consolidated rocks generally yield small quantities of water to wells except for the Mehrten Formation, which is an important aquifer (DWR). The unconsolidated deposits include 1) continental deposits, 2) lacustrine and marsh deposits), 3) older alluvium, 4) younger alluvium, and 5) flood-basin deposits. The continental deposits and older alluvium are the main water-yielding units in the unconsolidated deposits.

Groundwater flow direction is generally toward the south in agreement with the regional groundwater flow gradient, but may vary from south-southwest to south-southeast with local gradients likely influenced by pumping from municipal supply wells. Pumping tests on municipal wells indicate that they possess a large capture zone, and thus have a large influence upon general groundwater flow direction. In general, the City's municipal supply wells are screened between 100 and 500 feet below ground surface (Geomatrix, 2006).

DWR determined (DWR Bulletin 118, 2003) that the groundwater basin underlying Eastern San Joaquin County is overdrafted, and groundwater levels in the County and the City are generally decreasing. The groundwater levels also fluctuate over time depending on precipitation, aquifer recharge, and pumping demands. Groundwater levels relative to mean sea level (MSL), and the corresponding annual precipitation from 1930 through 2010 are shown in **Figure 4-1**. Overall, the average annual decrease in groundwater levels from 1930 to 2010 has been about 0.40 feet per year. Generally, groundwater levels have decreased with the increase in population and water production. However, annual rainfall also influences groundwater level. The groundwater level increase from 1981 to 1984 can be partially

attributed to the increase in annual rainfall from 1981 to 1983. Groundwater levels for the years 1927 to 1961 were obtained from East Bay Municipal Utilities District (EBMUD) for the City's 12 square mile area. Groundwater level data from 1962 to the present were obtained from the City's Public Works Department for Well No. 2, one of the oldest production wells in the City.

Figure 4-1: Historical Groundwater Levels



Source: City of Lodi Public Works Department, WRCC 2010

4.3.1 Existing Water Supply Facilities

The Utility currently operates 26 groundwater production wells. The locations of the wells are presented in **Figure 4-2** and discussed in further detail below.

Figure 4-2: Well Locations and Storage Facilities

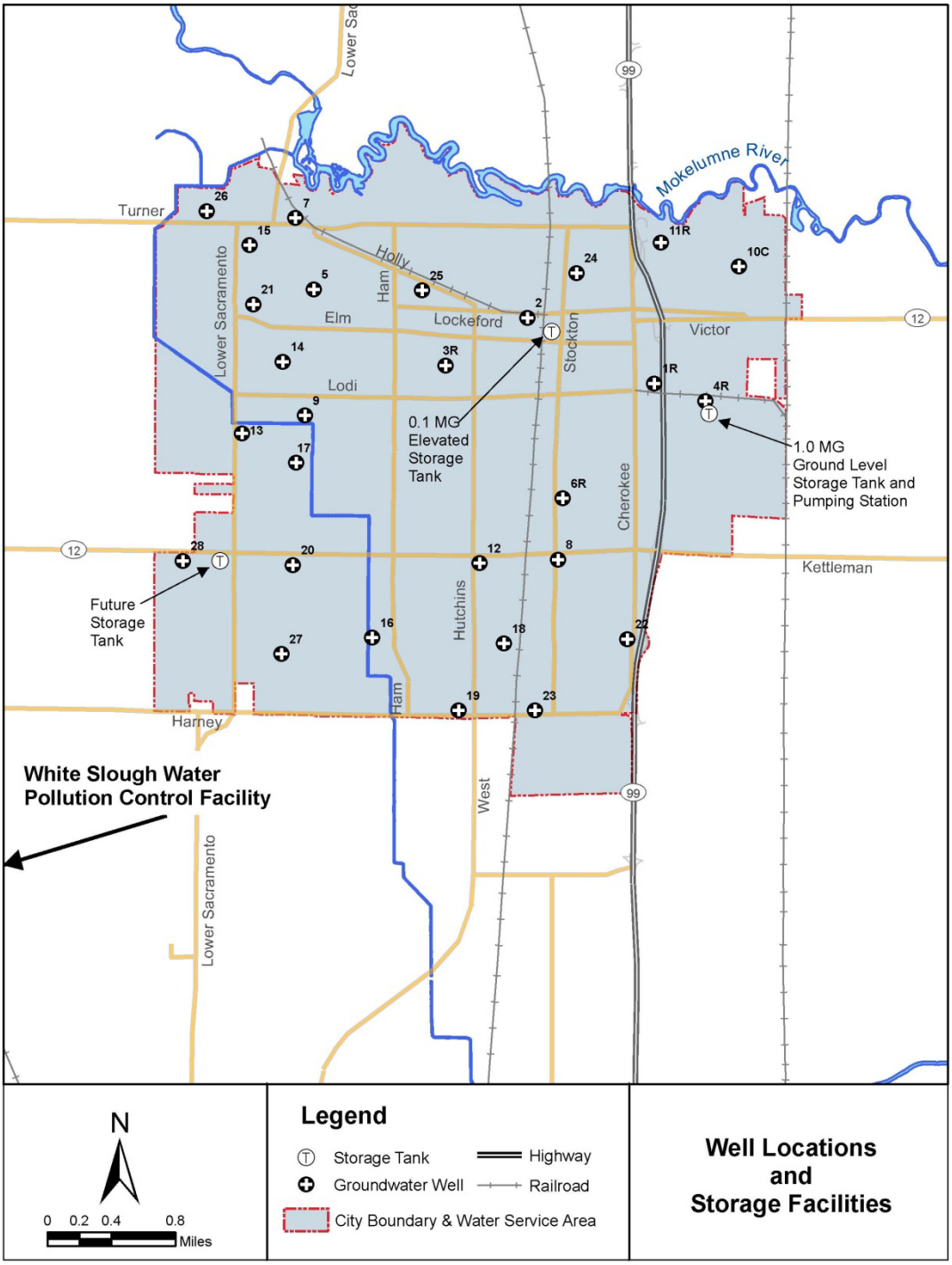


Figure 4-2 Note: Wells 27 and 28 are future wells that are not currently permitted as of this report.

The 26 wells that currently provide water to the City have a combined capacity of 35,210 gallons per minute (gpm), or 50.7 million gallons per day (mgd). The wells operate automatically on water pressure demand and pump directly into the distribution system. All wells are equipped to provide emergency chlorination as needed. Historically, water has not required chlorination. Six wells are equipped with granular activated carbon (GAC) for the removal of dibromochloropropane (DBCP), a legacy pesticide historically used in the area; other wells show trace levels of DBCP but are within State and Federal standards. Water quality of the wells is discussed in Section 5.3.1 of this report.

Table 4-3: Historical Groundwater Production (Guidebook Table 18)[a]

Year	Groundwater Production, AF	Percent of Total Water Supply
1970	11,462	100%
1971	12,303	100%
1972	11,686	100%
1973	12,204	100%
1974	12,002	100%
1975	12,294	100%
1976	13,607	100%
1977	10,578	100%
1978	11,477	100%
1979	12,349	100%
1980	12,312	100%
1981	12,487	100%
1982	11,560	100%
1983	11,539	100%
1984	13,997	100%
1985	14,813	100%
1986	15,080	100%
1987	15,304	100%
1988	15,359	100%
1989	14,653	100%
1990	15,387	100%
1991	13,313	100%
1992	13,985	100%
1993	14,013	100%
1994	14,301	100%
1995	14,390	100%
1996	15,102	100%
1997	16,330	100%
1998	14,461	100%
1999	16,588	100%
2000	16,724	100%
2001	17,108	100%
2002	16,641	100%
2003	16,185	100%
2004	17,011	100%
2005	16,473	100%
2006	16,310	100%
2007	17,137	100%
2008	17,171	100%
2009	16,059	100%
2010	15,005	100%

4.3.2 Future Groundwater Supply

The continuing decline of groundwater levels in the aquifer underlying the City means that the sustainable annual groundwater supply available to the City is something less than what is currently extracted. As a member agency of GBA, the City is participating in the development of policies and programs, including groundwater recharge and conjunctive use programs, intended to help eliminate the eastern San Joaquin County groundwater basin overdraft condition.

The GBA adopted the Eastern San Joaquin Groundwater Basin Groundwater Management Plan (GMP) in September 2004. The GMP identified several objectives for managing the basin focusing on maintaining or enhancing groundwater levels and groundwater quality, protecting surface water quality and flows, and preventing land subsidence. The GMP was intended to lay the groundwork for further refinement of solutions for the basin. The plan identified options for managing the basin with respect to these objectives, and characterized them according to their cost. The plan also described the Integrated Conjunctive Use Program, which was identified as the key element in fulfilling the purpose of the GMP.

In July 2007, the GBA adopted the *Eastern San Joaquin Integrated Regional Water Management Plan*. The IRWMP defines and integrates key water management strategies and establishes a course of action for the implementation of a comprehensive solution for water supplies in Eastern San Joaquin County. This comprehensive solution, called the Eastern San Joaquin Integrated Conjunctive Use Program, is a prioritized set of projects and actions that conjunctively manage surface water and groundwater supplies in a manner that ensures the social, economic, and environmental sustainability of this community.

Additionally, the City plans to maintain its groundwater pumping at a sustainable yield in the future. A safe yield of approximately 15,000 AFY has been estimated for the aquifer serving Lodi based on water balance calculations performed using data primarily from the Eastern San Joaquin Groundwater Management Plan (**Appendix G**). This safe yield estimate reflects an acreage-based relationship. Therefore, as the City's land area increases, the estimated safe yield of the underlying aquifer will likely increase. This calculation has been included as **Appendix H**. The safe yield estimate will be revisited if additional studies are completed revising the safe yield of the basin. For the purposes of this UWMP, 15,000 AFY has been assumed as the amount of groundwater available during all future (post-2005) years. Although rigorous scientific analyses have not been performed, the City projects that some recharge of the groundwater basin will occur as the amount of groundwater pumped annually decreases. This result, however, is contingent on the cooperative efforts of all groundwater users within the basin, including other cities, agriculture, and private well owners, to reduce groundwater extraction. The City does not expect development of cones of depression, significant changes in direction or amount of groundwater flow, changes in the movement or levels of contaminants, or changes in groundwater salinity and/or total dissolved solids (TDS) concentrations. The amount of groundwater that is projected to be pumped over the next twenty-five years is presented in **Table 4-4**.

Table 4-4: Volume Projected to be Pumped (Guidebook Table 19)

Basin name	2015	2020	2025	2030	2035
San Joaquin Valley Groundwater Basin	15,000	15,000	15,000	15,000	15,000
Total groundwater pumped	15,000	15,000	15,000	15,000	15,000
Percent of total water supply	52%	51%	51%	50%	49%

Footnote:

a. Refers to the total supplies shown in Table 4-1.

4.4 Transfer and Exchange Opportunities

The City does not currently have any approved plans to pursue exchange or transfer opportunities.

4.5 Desalinated Water Opportunities

At the present time the City does not foresee any opportunities for the use of desalinated water, which includes ocean water, brackish ocean water, and brackish groundwater, as long term supplies.

4.6 Recycled Water Opportunities

This section describes the availability of recycled water supplies and the existing and planned

4.6.1 Wastewater Collection and Treatment

The City currently treats approximately 7,100 AFY of wastewater at WSWPCF, of which 1,642 AFY is used in the vicinity of WSWPCF for agricultural purposes. WSWPCF has adequate capacity to treat all wastewater flows to Title 22 standards. The City recently completed an upgrade of the WSWPCF to treat 8.5 mgd (9,500 AFY), which also improved the City's municipal wastewater treatment facilities to meet future NPDES permit limits and long-term land management needs. Further expansion and treatment plant improvements will be implemented as required to meet permitting and capacity needs. Projected wastewater flows are summarized in **Table 4-5**. Future flow projections are based on an assumed wastewater production of 105 gallons per capita per day.

Table 4-5: Recycled Water – Wastewater Collection and Treatment (Guidebook Table 21)

Type of Wastewater	2005	2010	2015	2020	2025	2030	2035
Wastewater collected & treated in service area	7,508	7,095	7,861	8,262	8,683	9,126	9,592
Volume that meets recycled water standard	7,508	7,095	7,861	8,262	8,683	9,126	9,592

Footnote:

a. Projected future wastewater flows are based on a production rate of 105 gpcd.

4.6.2 Non-Recycled Water Disposal

The City currently discharges all wastewater effluent that is not used for recycled water into Dredger Cut, a slough flowing into the Delta. Existing and projected disposal into the Delta is summarized in **Table 4-6**.

Table 4-6: Recycled Water – Non-Recycled Wastewater Disposal (Guidebook Table 22)

Method of disposal	Treatment Level	2010	2015	2020	2025	2030	2035
Surface Water Discharge to Delta	Tertiary	5,453	5,019	5,420	5,841	6,284	6,750
Total		5,453	5,019	5,420	5,841	6,284	6,750

4.6.3 Recycled Water Existing and Potential Uses

The City currently uses 1,465 AFY of its recycled water supply for agricultural irrigation around the plant. This water is mixed with industrial process wastewater (primarily from a large cannery) to irrigate approximately 790 acres of City-owned land. Current recycled water uses also include 50 AFY to replenish mosquito-fish rearing ponds, and 127 AFY to provide steam for a 49-megawatt natural gas-powered generator. The City has agreed to provide up to 1,800 AFY (with an anticipated demand of 1,200 AFY) to NCPA for use at its future power plant currently under construction (anticipated completion in 2012). The power plant is currently under construction and is expected to be completed in 2012.

Table 4-7: Recycled Water – Potential Future Use (Guidebook Table 23)

User type	Description	Feasibility	2015	2020	2025	2030	2035
Agricultural irrigation	Land Application around WWTP	Yes, existing use	1,465	1,465	1,465	1,465	1,465
Industrial reuse	Industrial uses near WWTP and existing and planned uses at NCPA Power Plant	Yes, existing and planned uses	1,327	1,327	1,327	1,327	1,327
Other	Fish Pond Replenishment	Yes, existing use	50	50	50	50	50
Total			2,842	2,842	2,842	2,842	2,842

Table 4-8 compares actual recycled water use in 2010 with projected use in 2005. Agricultural irrigation has changed from the 2005 projection due to changes in land management of the irrigated land.

Table 4-8: Recycled Water – 2005 UWMP Use Projection Compared to 2010 Actual (Guidebook Table 24)

Use type	2010 actual use	2005 Projection for 2010[a]
Agricultural irrigation	1,465	2,350
Industrial reuse	127	1,220
Fish pond replenishment	50	50
Total	1,642	3,620

Footnote:

a. From the 2005 Urban Water Management Plan.

Encouraging Recycled Water Use

The City does not have any current plans to utilize financial incentives for recycled water use. As recycled water projects are identified, financial incentives may be one action considered to promote the implementation of the recycled water project, if the project is feasible and cost-effective.

The City completed a Recycled Water Master Plan (RWMP) which evaluated the City's alternatives for encouraging the use of recycled water. Through the evaluation, it was determined that there were no economically feasible projects at this time without additional outside funding. The City will continue to evaluate the potential for grant funding of recycled water projects, and/or seek opportunities to implement portions of larger projects as they becomes economically feasible.

Recycled Water Use Optimization Plan.

The City's RWMP describes the City's approach to optimizing the use of recycled water in the service area. The Recycled Water Master Plan has been included as **Appendix I**. The RWMP evaluated existing and potential customers for recycled water as well as available supplies. Additional uses could be constrained without the availability of seasonal storage. All alternatives developed as part of the RWMP therefore included a seasonal storage component.

Based on the economic and technical analysis, the RWMP identified two projects that could benefit the City's efforts to develop sustainable long term water supplies for the community. The two projects include an agricultural reuse project using recycled water supply from the WSWPCF, and a non-potable water system serving urban customers. The two projects could potentially be moved forward in parallel.

The agricultural reuse project was identified as the preferred recycled water project, although it not cost effective at this time. It was determined to be the most cost-effective of the options considered, however, and would provide water to users who are currently using groundwater. The project would provide approximately 3,700 AFY to agricultural customers and industrial customers adjacent to WSWPCF. The project would include construction of seasonal storage ponds, approximately 7 miles of new piping, and a pump station. The annualized cost was estimated to be approximately $1,800 per acre-foot. The City will continue to evaluate options for outside funding of recycled water projects, and implement projects if they become economically feasible.

The City is currently evaluating the potential for implementing the urban non-potable water system project. Such a system would utilize the City's existing WID supplies to serve potential urban customers. The non-potable water system could then be integrated with a recycled water system when a larger recycled water project becomes feasible. The size and scope of the non-potable water system, as well as a future recycled water project, will be determined through separate studies.

4.7 Future Water Projects

The only water supply project currently planned is the City's surface water treatment facility (SWTF), currently under construction. This facility will be located on approximately four acres of City-owned property between the Union Pacific Railroad (UPRR) spur line and Lodi Lake, near the intersection of Turner Road and Lower Sacramento Road. A raw water pump station would be constructed adjacent the WID canal to convey water to the SWTF. The SWTF will be constructed with an initial firm capacity of 10 mgd, and will be expandable up to 20 mgd.

Supplies expected to be provided by the facility are summarized in **Table 4-9**. Note that dry year supplies are based on the minimum 3,000 AFY that WID is contracted to supply under dry year conditions when its supplies are restricted.

Table 4-9: Future Water Supply Project (Guidebook Table 26)

Project name	Projected start date	Projected completion date	Normal-year supply	Single-dry year supply[a]	Multiple-dry year first year supply[a]	Multiple-dry year second year supply[a]	Multiple-dry year third year supply[a]
Surface Water Treatment Plant	Apr 2011	2012	6,000	3,000	3,000	3,000	3,000
Total			6,000	3,000	3,000	3,000	3,000

Footnote:

a. Dry year supplies based on contracted minimum supply from WID of 3,000 AFY.

Chapter 5 Water Supply Reliability and Water Shortage Contingency Planning

This section describes the overall reliability of Lodi's water supplies, including projected future supplies and demands and the drought contingency plan.

5.1 Water Supply Reliability

Water supply from the City's only wholesale supplier, WID, is susceptible to drought conditions when diversions from the Mokelumne River may be reduced. Even in the most severe drought conditions, however, contractually WID may only reduce the City's supply by 50 percent. Historical Mokelumne River diversion data provided to the City by WID indicate that in the last 85 years, there were only three dry periods that would have been significant enough to require reductions in supply provided to the City.

Water supply from the City's groundwater wells is considered to be very consistent. Historical fluctuations in groundwater levels due to changes in climatic conditions have been minor, and have not significantly impacted well production capacity. Additionally, six of the City's wells are equipped with granular activated carbon (GAC) treatment systems to remove dibromochloropropane (DBCP), and provide added insurance against inconsistencies caused by the presence of contaminants in the City's aquifer. Finally, the availability of eight emergency generators at various well locations ensures the City's ability to extract groundwater during extended power outages.

As discussed previously, the groundwater basin underlying the City is in overdraft, and groundwater levels are decreasing by approximately 0.39 ft/yr. From an extraction standpoint, however, this is a relatively slow process, and the City does not anticipate that overdrafting conditions will significantly impact its ability to extract groundwater in the short term. However, in addition to constructing a SWTF, the City remains committed to eliminating the overdraft condition in the long term and has been an active participant in actions to accomplish this task. As a member of GBA, the City has participated in the development of regional groundwater recharge and conjunctive use programs intended to replenish Eastern San Joaquin County's groundwater basin and promote sustainability for the future. A copy of the GBA Groundwater Management Plan is included in **Appendix G**.

Recycled water supply for the City is considered to be very consistent. Indoor water consumption by the City's customers, which does not significantly fluctuate with climatic conditions like outdoor water use, is the source of the City's recycled water supply. As such, the amount of recycled water available to the City is not expected to fluctuate in the future; indeed, as the number of water and sewer connections increase, so too will the City's recycled water supply.

Table 5-1 summarizes the factors affecting the consisting of the City of Lodi's supply. Water Code Section 10631(c)(2) requires water suppliers describe plans to supplement or replace sources that may not be available at a consistent level of use. As a result of the relative consistency of the City's water supplies, there are no plans at this time to replace or supplement any of the City's supply sources with alternative sources.

Additionally, Water Code Section 10620(f) requires water suppliers to describe their efforts to minimize the need to import water from other regions. The City of Lodi currently does not import water from other regions and there are no plans to start importing water from other regions.

Table 5-1: Factors Resulting in Inconsistencies in Supply (Guidebook Table 29)

Water supply sources	Limitation quantification	Legal	Environ-mental	Water quality	Climatic	Additional information
Woodbridge Irrigation District Surface Supply (Mokelumne River)	Up to 50% reduction during dry years (3 TAF)	None anticipated	None anticipated	None anticipated	Surface supply from the Mokelumne is subject to reductions in dry years	The City has an agreement with WID to purchase 6,000 AFY, up to 42,000AF at a time can be banked when not taken.
Groundwater (City wells)	None	None anticipated	None anticipated	None anticipated	None Anticipated: Historical gw fluctuations due to climate have been minor.	Six wells have GAC. Eight have emergency power.
Recycled Water	None	None anticipated	None anticipated	None anticipated	None anticipated	The amount of recycled water available to the City is consistent and if anything may increase in the future as water and sewer connections increase.

5.2 Water Shortage Contingency Planning

5.2.1 Catastrophic Supply Interruption Plan

The Water Code Section 10632 (c) requires actions to be undertaken by the water supplier to prepare for, and implement during a catastrophic interruption of water supplies. A catastrophic event that constitutes a proclamation of a water shortage would be any event, either natural or manmade, that causes a severe shortage of water, synonymous with or with greater severity than the Stage III or Stage IV water supply shortage conditions. In response to these possibilities, the City has developed an Emergency Response Plan (ERP), which includes appropriate personnel listings, resource inventories, locations for emergency operations centers, response procedures, and the steps necessary to resume normal operations. Because the City's ERP contains sensitive information, only a portion of the document has been included in **Appendix J**.

The City maintains a sound preventative maintenance program for its distribution system. Auxiliary generators are available and improvements to water facilities are made to minimize loss of these facilities during an earthquake or any disaster causing an electric power outage. Lodi is considered to be in a low-probability area for earthquakes.

Additional action items that may be pursued in preparing for and responding to a catastrophic water supply interruption could include:

- Increasing existing water storage.
- Obtaining additional water supplies.

5.2.2 Mandatory Prohibitions, Consumption Reduction, and Penalty Charges

The City of Lodi utilizes a five-stage rationing plan. The stages are summarized in **Table 5-2** and rationing measures associated with each stage are described below.

Table 5-2: Five Stages of Rationing During Water Supply Shortages (Guidebook Table 35)

Stage	Water Supply Conditions
I	Normal conditions
II	Minor shortage
III	Moderate shortage
IV	Severe shortage
V	Critical shortage

The prohibitions, consumption reduction methods, and penalties and charges for each of the five water supply stages are included in this section as required in California Water Code Sections 10632 (d), 10632 (e), and 10632 (f), respectively.

Stage I. Normal Water Conditions

During Stage I, there is no supply shortage and no reduction in water usage is required.

All requirements of the City's Water Conservation Ordinance (see **Appendix K**), Lodi Municipal Code, Section 13.08.290, are in effect for Stage I as normal conditions. In addition, the State's Model Water Efficient Landscape Ordinance is also in effect in the City, per State mandate, effective January 1, 2010. Lodi's water conservation program consists mainly of outdoor watering restrictions enforced by water conservation patrol staff, public education through local fairs, bill inserts, and newspaper articles, and an in-school education program. The waste of water is prohibited and defined in the Water Conservation Ordinance as:

- Failure to repair a controllable leak of water.
- Watering of lawns, flowerbeds, parking areas, tennis courts, patios, streets, or other exterior paved areas on days or times other than those outlined in Section 13.08.240 of the Water Conservation Ordinance as:
  - A. Watering Days:
    - 1. Premises having odd numbered street addresses on Wednesday, Friday, and Sunday.
    - 2. Premises having even numbered street addresses on Tuesday, Thursday, and Saturday.
  - B. Watering Hours: Any hour except that between May 1 and September 30 (inclusive) of each year watering between the hours of 10 a.m. and 6 p.m. is prohibited.
- Washing of sidewalks, driveways, parking areas, tennis courts, patios, streets, or other exterior paved areas or buildings except when required to remove any spillage of substances that may be a danger to public health or safety.
- Washing with water any motor vehicles, trailers, or movable equipment other than with a bucket and rinsing the vehicle or equipment by use of a hose for not more than three minutes.
- Use of a hose without a positive shut off nozzle.
- The excess watering of any area so that water flows into a gutter or any drainage area for a period exceeding three minutes.

- The unnecessary running of water in any residential, commercial, or industrial establishment onto the floor, pavement, ground or into any drain or drainage area, with any equipment or in any way for more than three minutes.
- Overwatering of lawns or landscapes from November 1 through February 28, or during or immediately following a rain.

Enforcement procedures and penalties for water wasting as defined in Section 13.08.250 of Lodi's Water Conservation Ordinance include:

- First Water Waste: Notification of water waste to the person at the premises of water waste by delivering an Information Sheet (included in Appendix C of Lodi's 2000 Urban Water Management Plan).
- Second Water Waste: In the event of a second waste of water within a 12 month period within 12 months of a first, the City will send a written notice to the person who receives the utility bill at the premises of water waste.
- Third Water Waste: In the event of a third waste of water within 12 months of a previous waste of water, the City will send a written notice and a $35 charge to the person who receives the utility bill for the premise of water waste.
- Fourth Water Waste: In the event of a fourth waste of water within 12 months of a previous waste of water, the City will send a written notice and a $75 charge to the person who receives the utility bill for the premises of the water waste.
- Fifth Water Waste: In the event of a fifth waste of water within 12 months of a previous waste of water, the City will send a written notice and a $150 charge to the person who receives the utility bill for the premise of the water waste. The City may also require a water meter and/or a flow restrictor to be installed at the waster's expense.

In addition to the enforcement procedures above, any person who wastes water, may also be charged with an infraction as per Sections 13.08.250 and 13.08.280 of the Water Conservation Ordinance.

Stage II. Water Alert

During Stage II of a water supply shortage, the shortage is minor and a 5% or greater reduction in water usage is required for the City to meet the immediate needs of its customers. Water alert conditions are declared and voluntary conservation encouraged. The water shortage situation is explained to the public and voluntary water conservation is requested. The City also explains other stages and forecasts future actions.

All mandatory requirements of Stage I remain in effect. Existing on-going water conservation measures are continued and emphasized as necessary to alert the public of the nature of the water supply shortage. The City maintains an ongoing public information campaign consisting of distribution of literature, speaking engagements, bill inserts, and conversation messages printed in local newspapers. Educational programs in area schools are ongoing and utilized as necessary.

Enforcement procedures and penalties for water wasting will continue as described in the Lodi Water Conservation Ordinance Sections 13.08.250 and 13.08.280.

Stage III. Water Warning

During Stage III, the water supply shortage is moderate. The City aggressively continues its public information and education programs. Consumers are asked for a 15% or greater voluntary or mandatory water use reduction.

All mandatory requirements of Stages I and II remain in effect. Additional requirements may include:

- Landscape irrigation restrictions shall be implemented to limit the allowable frequency of irrigation to a maximum of two days per week and based on the following schedule:
  1. Premises having odd numbered street addresses irrigate only on Wednesday and Sunday.
  2. Premises having even numbered street addresses irrigate only on Tuesday and Saturday.
- Businesses are not to serve water unless requested.

Enforcement procedures and penalties for water wasting will continue as described in the Lodi Water Conservation Ordinance Sections 13.08.250 and 13.08.280.

Stage IV. Water Crisis

During Stage IV of a water supply shortage, the shortage is severe and a 30% or greater reduction in water usage is required for the City to meet the immediate needs of its customers.

All mandatory requirements of Stages I, II, and III remain in effect. Additional requirements may include:

- Landscape irrigation restrictions shall be implemented to limit the allowable frequency of irrigation to a maximum of one day per week and based on the following schedule:
  1. Premises having odd numbered street addresses irrigate only on Sunday.
  2. Premises having even numbered street addresses irrigate only on Saturday.
- No potable water from the City's system shall be used to fill or refill new swimming pools, artificial lakes, ponds, or streams until the water crisis is declared over.
- Water use for ornamental ponds and fountains is prohibited.
- Washing of automobiles and equipment shall be done on the lawn or at a commercial establishment that uses recycled or reclaimed water.
- Flushing of sewers or fire hydrants is permitted only in cases of emergency and essential operations.

Additionally, permanent water meters on existing non-metered services and/or flow restrictors on existing metered services are installed by the City on the service at customer's expense upon receipt of the second violation.

Stage V. Water Emergency

During Stage V of a water supply shortage, the shortage is critical and a 50% or greater reduction in water usage is required for the City to meet the immediate needs of its customers.

All mandatory requirements of Stages I, II, III, and IV remain in effect. Additional requirements may include:

- Landscape irrigation shall not be allowed.
- Washing of automobiles and equipment shall be done at a commercial establishment that uses recycled or reclaimed water.
- No potable water from the City's system shall be used for construction purposes such as dust control, compaction, or trench jetting.
- Large industrial users, for example canneries and other food manufacturers, shall be required to reduce or cease all water use.

5.2.3 Analysis of Revenue Impacts of Reduced Sales during Shortages

Section 10632 (g) of the California Water Code requires an analysis of the impacts of the actions taken for conservation and water restriction on the revenues and expenditures of the water supplier. When the 2005 UWMP was completed, over 90% of the City's water was supplied to non-metered customers who

were charged a flat rate. Under this rate structure, revenue impacts of decreasing supply and consumer use due to a water shortage would have been minimal.

In 2010, the City of Lodi initiated a water metering installation program on residential structures. Any residential properties constructed since 1992 were already equipped with water meters and as part of the program, those property owners were transitioned from flat rate billing to usage-based water bill in January 2011. The remaining residences will have water meters installed in phases over the next seven years. During the meter installation program, two different billing structures will be in place: flat rates for unmetered customers based on the number of bedrooms and usage-based rates for metered customers. The majority of customers will receive a monthly usage-based water bill that consists of a fixed service charge based on the water meter size and a tiered usage-based charge to help encourage water conservation.

The City of Lodi utilizes a rate model that is evaluated annually to ensure an ongoing revenue stream that will adequately support operation of the utility. The fixed service charge for metered customers will help buffer the economic impacts of a reduction in use due to water shortages. For a catastrophic shortage, the City would use financial reserves to support the operation of the utility in the short term. For a long term shortage, such as a multi-year drought, the City would make rate adjustments or institute drought pricing as needed.

5.2.4 Draft Water Shortage Contingency Ordinance

Section 10632(h) of the California Water Code requires the inclusion of a draft water shortage contingency resolution. In the event of a water shortage emergency, the following is a draft water shortage contingency resolution to be passed by the Lodi City Council. The following draft ordinance gives the City Council's support to the Public Works Director in taking emergency actions as currently authorized in Lodi Municipal Code, Chapter 13.08, Article III, Section 13.08.290, “Emergency Water Conservation”.

DRAFT

City of Lodi

Resolution No._____

WHEREAS, Lodi Municipal Code, Chapter 13.08, Article III, Section 13.08.290, Emergency Water Conservation allows the Public Works Director to determine the degree of emergency and determine what additional restrictions of water use or other appropriate actions must be taken to protect the water system and the citizens of Lodi; and

WHEREAS, the City of Lodi is experiencing water shortages, therefore;

BE IT RESOLVED by the City Council of the City of Lodi that full support is given to the Public Works Director to make the appropriate recommendations which may include increased restrictions on watering days and hours, restrictions on washing vehicles, etc., restrictions on large water users, restrictions on flushing of water lines, restrictions on the filling of swimming pools, and increases in the current penalties for not complying with water conservation restrictions for the duration of the emergency, and urge full support and cooperation from the citizens of Lodi.

[Affix Official Seal Here]

Signature:_____

Name:_____

Title:_____

Clerk of City of Lodi

5.3 Water Quality

Water quality is an important factor in determining supply reliability; if adequate quality cannot be maintained, then the supply may be lost. In general, the City is well-equipped to handle a variety of constituents present in its supply sources that can affect water quality.

Pollutants from anthropogenic sources have the potential to impact Lodi's groundwater quality. The City has taken steps to address these potential impacts, as described below. The recycled water produced by WSWPCF is considered safe for municipal irrigation by California Department of Public Health. Water quality in the Mokelumne River, the source of the City's surface water supply, is generally of very high quality.

Although the City's existing facilities are capable of producing a reliable and high quality source of water for its service area, catastrophic events such as earthquakes, major fire emergencies, water outages due to extended losses of power, localized flooding, surface water or groundwater contamination, and acts of sabotage could impact the City's ability to maintain high water quality. To prepare for such events, the City has prepared an Emergency Response Plan (ERP), which includes federal, state, and local contact directories, an emergency contractor directory, resource inventories, locations for emergency operations centers, response procedures, and the steps necessary to resume normal operations. An excerpt[1] from the plan is included in **Appendix J**.

The City has taken steps to address any potential water quality issues that could impact the reliability of its current and projected supply sources. There are no plans to replace or supplement these sources.

5.3.1 Groundwater Quality

Several chemicals have been identified as potential groundwater contaminants in some of the City's wells. The City has taken steps to treat affected groundwater at six wells with GAC (granular activated carbon) treatment. In addition, the City conducts regular monitoring of well water quality and all wells are capable of providing as-needed chlorination for disinfection. Specific constituents of concern are discussed below.

Constituents of Concern

DBCP

DBCP has been used by area farmers to kill nematodes in vineyards. DBCP was banned in California in 1977, but is still present in trace levels in some groundwater. In 2009, the City used 25 of 26 wells to provide drinking water. The wells are rotated so over the course of time, water being delivered is a blend from these wells. Twelve of Lodi's wells had no detectable DBCP. Six wells have filters to remove DBCP. Well 6R has recently exceeded the MCL for DBCP and has been temporarily shut down. A GAC treatment system is being planned for installation at this well during Fiscal Year 2011/2012. The remaining wells meet State and Federal standards, but have trace amounts of DBCP (Lodi 2010). As a result, DBCP concentrations in the water served to the people of Lodi are within the level deemed safe by the U.S. EPA and the State of California.

In 1996 the City settled a lawsuit against DBCP manufacturers, who have already paid the City for a large portion of Lodi's costs related to DBCP treatment. DBCP manufacturers will continue to pay a large portion of the City's DBCP related costs for the settlement's 40-year life.

MTBE

MTBE (Methyl-Tert-Butyl-Ether) is a controversial additive to gasoline that can affect the odor and taste of drinking water. MTBE can potentially leak from service stations into the groundwater. Monitoring of City wells has not found any detected traces of MTBE to date. The City has a program of monitoring all

[1] Because the City's ERP contains sensitive information, the entire document has not been made available for public review. The document is kept on file by the City.

City wells for MTBE. Wells that are at greater risk (i.e., closer to gasoline stations) are monitored more frequently.

PCE and TCE

The City, working with regulatory agencies and potentially responsible parties in a cooperative manner, is pursuing a resolution to a groundwater contamination problem in the north and central Lodi area. None of the City's operating wells are currently out of compliance with any drinking water standards. Tetrachloroethylene (PCE) and Trichloroethylene (TCE) have been detected in samples taken in soils and groundwater. Cleanup work in portions of the area has commenced and the City expects additional areas to commence cleanup work in the near future.

Bacteriological Quality

The City takes over 20 samples per week from throughout its water distribution system for bacterial water quality. Regulations allow for 5% of all total coliform samples in a month to be positive. The City met all bacteriological standards in 2009. Well water from the City's wells receives low level chlorination as a proactive step to help keep the water system in compliance with strict bacteriological standards.

5.3.2 Surface Water Quality

Starting in 2012, the City will begin operating a surface water treatment plant and delivering water from the Mokelumne River. Water quality in the Mokelumne River water is generally very high quality because it comes from a remote, mostly undeveloped watershed. EBMUD maintains its water supply reservoirs, Camanche Reservoir and Pardee Reservoir, upstream of the City of Lodi and protects water quality through conservation easements, watershed management and other measures.

5.3.3 Projected Water Quality Impacts to Water Supply

No impacts to groundwater or surface water supplies due to water quality concerns are anticipated. The City has already undertaken steps to address expected water quality issues, as described above. No significant changes in groundwater quality are anticipated. As described above, the surface water supply is generally very high quality; no significant changes are anticipated in the quality of the surface water supply.

5.4 Drought Planning

5.4.1 Reliability and Climatic Variability

Water Code Section 10631 (c)(1) requires water suppliers to consider supply conditions during an average water year, a single dry water year, and multiple dry water years. This section identifies the historical water years that meet these conditions for drought planning purposes. The base year for average conditions is the year in the historical sequence that most closely represents median runoff levels and patterns. It was determined by comparing runoff in individual years to the median runoff during the previous 30 years based on the San Joaquin River Index.

The single-dry year is the water year with the lowest annual runoff for a watershed since 1903. In the Mokelumne River Watershed, this water year was 1977. The multiple dry-year period is the multiple (3 or more year) period with the lowest average annual runoff since 1903. For the City of Lodi's basin, this period is 1987-1992. These are summarized in the table below.

Table 5-3: Basis of Water Year Data (Guidebook Table 27)

Water Year Type	Base Year(s)
Average Water Year	2009
Single-Dry Water Year	1977
Multiple-Dry Water Years	1987-1992

Table 5-4 summarizes the actual water supply conditions for the City of Lodi under the conditions described above. Note that historically, the City of Lodi's supply has been entirely groundwater which is not as vulnerable as surface water to seasonal variations in runoff. In the future, a portion of the City's supply will be surface water and the reliability of this supply is discussed further in subsequent sections.

Table 5-4: Supply Reliability – Historical Conditions (Guidebook Table 28)

Supply Source	Average Water Year	Single Dry Water Year	Multiple Dry Water Years			
			Year 1	Year 2	Year 3	Year 4
Groundwater	100%	100%	100%	100%	100%	100%
WID Surface Supply[1]	100%	50%	100%	100%	100%	50%

[1]Estimate of WID surface supply reliability based on historical data provided by WID. Note that the City will not begin using WID Surface Supply until the SWTP is completed in 2012.

5.4.2 Minimum Supply for the Next Three Years

California Water Code Section 10632(b) requires an estimate of the minimum annual water supply availability during each of the next three water years based on the driest three-year historical sequence for the agency's water supply. The City of Lodi's water supply has historically been 100% groundwater. Starting in 2012, a portion of the City's supply will be surface water from the Mokelumne River. The reliability of the groundwater supply over a 3-year drought is assumed to be 100%. Although regional groundwater levels have been dropping, no short-term water supply problems are anticipated in the next three years.

The surface water supply is purchased wholesale from Woodbridge Irrigation District and is subject to up to a 50% reduction in dry years. This is reflected in the table below.

Table 5-5: Supply Reliability – Current Water Sources (Guidebook Table 31)

Water supply sources	Average / Normal Water Year Supply[1]	Multiple Dry Water Year Supply		
		Year 2011[1]	Year 2012	Year 2013
Groundwater pumping	15,000	15,000	15,000	15,000
Woodbridge Irrigation District Surface Supply	6,000	3,000	3,000	3,000
Percent of normal year:	100%	85.7%	85.7%	85.7%

Footnotes:

[1]While the supply from WID is currently available, the City will not be able to treat and deliver this water until 2012 when the new SWTP comes online.

5.4.3 Stages of Actions in Response to Shortage

Section 10632(a) of the California Water Code requires that the City develop stages of action to be undertaken in response to a water supply shortage, including up to a 50 percent reduction in water supply.

The City must also identify specific water supply conditions which are applicable to each stage. Section 10632(f) requires that the City's urban water shortage contingency plan include penalties or charges for excessive use.

A five-stage rationing plan, including voluntary and mandatory stages, is described below. The stage determination and public declaration during a water supply shortage will be made by the Public Works Director. **Table 5-6** summarizes the triggering mechanisms for each water stage.

Table 5-6: Water Shortage Contingency – Rationing Stages to Address Water Supply Shortages
(Guidebook Table 35)

Stage	Water Supply Conditions	Triggering Mechanism
I	Normal conditions	No trigger; normal conditions
II	Minor shortage	Cutback in available water supply of 0 to 5%
III	Moderate shortage	Cutback in available water supply of 5 to 15%
IV	Severe shortage	Cutback in available water supply of 15 to 30%
V	Critical shortage	Cutback in available water supply of 30 to 50%

5.4.4 Mechanism for Determining Actual Reductions in Water Use

Section 10632(h, i) of the California Water Code requires that the Urban Water Shortage Contingency Plan include a mechanism for determining actual reductions in water use.

For metered accounts, reductions in water use for each user can be determined based on meter readings. For unmetered accounts and the service area as a whole, reductions in water use must be determined by measuring water production at the City's well sites and treatment plant. As described previously, the City is in the midst of a meter installation program and by 2017, all residential connections will be metered. The City is currently evaluating a schedule to implement metering on remaining unmetered commercial customers.

In the event of a water shortage, the City will monitor its production meters more frequently for changes in the volumes of water produced at the City's wells and surface water treatment plant as well as at the WSWPCF. The City will also monitor water delivered to individual metered service connections for changes in delivered water.

5.4.5 Reliability - Normal Year

Water Code Section 10635(1) requires water suppliers to assess their water supply and demand under normal, dry, and multiple dry year conditions, in five-year increments. During normal water years, no curtailments or other reductions in supply are expected for any of the City's supplies. The projected normal water year supplies from 2015 to 2035 are shown in **Table 5-7**.

Table 5-7: Supply and Demand Comparison – Normal Year (Guidebook Table 32)

	2015	2020	2025	2030	2035
Supply totals (from Table 4-1)	28,861	29,262	29,683	30,126	30,592
Demand totals (From Table 3-7)	19,129	18,500	19,298	20,138	21,020
Difference	9,731	10,762	10,385	9,988	9,571
Difference as % of Supply	33.7%	36.8%	35.0%	33.2%	31.3%
Difference as % of Demand	50.9%	58.2%	53.8%	49.6%	45.5%

5.4.6 Reliability - Single Dry Year

During single dry water years, there may be up to a 50 percent curtailment in the City's surface water supply by WID. No reductions are assumed for the City's recycled water or groundwater supplies. The projected single dry water year supplies from 2015 to 2035 are shown in **Table 5-8**.

Table 5-8: Supply and Demand Comparison – Single Dry Year (Guidebook Table 33)

	2015	2020	2025	2030	2035
Supply totals	25,861	26,262	26,683	27,126	27,592
Demand totals	19,129	18,500	19,298	20,138	21,020
Difference	6,731	7,762	7,385	6,988	6,571
Difference as % of Supply	26.0%	29.6%	27.7%	25.8%	23.8%
Difference as % of Demand	35.2%	42.0%	38.3%	34.7%	31.3%

5.4.7 Reliability - Multiple Dry Years

Because the City's surface water supply is the only supply that is considered to be susceptible to dry water years, and because 50 percent is the maximum annual curtailment allowed under the City's contract with WID, supplies available during multiple dry water years are assumed to be no different than supplies available during single dry water years. The projected multiple dry water year supplies from 2015 to 2035 are shown in **Table 5-9**.

Table 5-9: Supply and Demand Comparison – Multiple Dry Years (Guidebook Table 34)

		2015	2020	2025	2030	2035
Multiple-dry year first year supply	Supply totals	25,861	26,262	26,683	27,126	27,592
	Demand totals	19,129	18,500	19,298	20,138	21,020
	Difference	6,731	7,762	7,385	6,988	6,571
	Difference as % of Supply	26.0%	29.6%	27.7%	25.8%	23.8%
	Difference as % of Demand	35.2%	42.0%	38.3%	34.7%	31.3%
Multiple-dry year second year supply	Supply totals	25,861	26,262	26,683	27,126	27,592
	Demand totals	19,129	18,500	19,298	20,138	21,020
	Difference	6,731	7,762	7,385	6,988	6,571
	Difference as % of Supply	26.0%	29.6%	27.7%	25.8%	23.8%
	Difference as % of Demand	35.2%	42.0%	38.3%	34.7%	31.3%
Multiple-dry year third year supply	Supply totals	25,861	26,262	26,683	27,126	27,592
	Demand totals	19,129	18,500	19,298	20,138	21,020
	Difference	6,731	7,762	7,385	6,988	6,571
	Difference as % of Supply	26.0%	29.6%	27.7%	25.8%	23.8%
	Difference as % of Demand	35.2%	42.0%	38.3%	34.7%	31.3%

5.4.8 Supplies and Demands Excluding Recycled Water System

To further evaluate the City's supplies, a comparison between demands and supplies excluding the existing and proposed recycled water system was performed. This represents the capacity of the City's existing groundwater and surface water supplies to meet the City's non-recycled water demands. This evaluation was performed for normal years; during dry years it is anticipated that the City would increase groundwater withdrawals to make up for the reduction in surface water supplies. **Table 5-10** shows that the City has sufficient capacity to meet anticipated demands through 2035 without recycled water. Beyond 2035, an additional source of supply, either recycled water or another source, may be necessary to supplement existing groundwater and surface water supplies.

Table 5-10: Supply and Demand Comparison – Normal Year Excluding Recycled Water Demands and Supplies

	2015	2020	2025	2030	2035
Supply totals	21,000	21,000	21,000	21,000	21,000
Demand totals (From Table 11)	16,288	15,658	16,457	17,296	18,178
Difference	4,712	5,342	4,543	3,704	2,822
Difference as % of Supply	22.4%	25.4%	21.6%	17.6%	13.4%
Difference as % of Demand	28.9%	34.1%	27.6%	21.4%	15.5%

Chapter 6 Demand Management Measures

This chapter presents a detailed analysis of the Demand Management Measures (DMMs) contained in the UWMP Act, as well as the City's existing efforts to further develop its water conservation program. A DMM, also known as a Best Management Practice, is a program designed to maximize the efficient use of water and minimize water waste. This section includes a description of each DMM identified in the UWMP Guidelines. For those being implemented by the City, DMM effectiveness, implementation schedule, costs, and methods for improvement are discussed. For those DMMs not currently being implemented, a cost-benefit analysis and discussion of funding and authority to implement is provided.

LAW

California Water Code Section 10631(f) requires that suppliers provide a description of the supplier's water demand management measures that includes the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures.

(2) A schedule of implementation for all demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of such savings on the supplier's ability to further reduce demand.

For any of the fourteen water demand management measures identified in the California Water Code Section 10631 (f) that are <u>not</u> being implemented, suppliers must provide the following information:

(1) A cost-benefit analysis that documents total costs and total benefits.

(2) A description of economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(3) A description of available funding to implement any planned water supply project providing water at a higher unit cost

(4) A description of the water supplier's legal authority and ability to work with other agencies to implement the DMM.

OVERVIEW

Water conservation in Lodi is supported by the City Council and Lodi's citizens. The City's current water conservation program consists mainly of outdoor watering restrictions enforced by water conservation patrol staff, public education, and an in-school education program.

The City has had an enforced ordinance for water conservation continuously since 1977 and it has developed into one of the most comprehensive on-going programs functioning in the San Joaquin Valley. A copy of the conservation ordinance information sheet, as well as the City's Water Conservation Ordinance, is included in **Appendix K**. The program consists predominantly of outdoor watering

restrictions enforced by water conservation patrol officers, public education, and an in-school education program. From 1977 through 1988, a single water conservation officer patrolled during the months of May through October. Since 1989, three to four water conservation officers have patrolled from May through October to intensify and enhance the program.

The City is committed to water conservation and has implemented several additional policies and on-going programs that promote and encourage water conservation. In addition, the City has several drought-specific programs that can be implemented if water supplies become limited and the need for more intensive water conservation becomes necessary. **Table 6-1** provides an overview of the City's current water conservation policies and programs as they relate to the fourteen DMMs included in the UWMP Act. Detailed descriptions of the City's policies and programs follow. Benefit-to-cost (B/C) ratios are provided for each DMM that is not currently being implemented. B/C ratios of less than one are not considered to be financially beneficial, and are not recommended for implementation. For all benefit-costs analyses presented herein, the value of conserved water is estimated at $1,532/million gallons (MG), or $500/acre-foot (AF), and the real discount rate is estimated at 6.15 percent. The value of the conserved water is based upon the estimated costs for new well construction, the costs associated with treatment and distribution of surface water supplies, and non-water utility benefits (such as reduced wastewater conveyance and treatment costs).

Table 6-1: Supply and Demand Comparison – Multiple Dry Years (Guidebook Table 34)

DMM	Demand Management Measure Description	City Conservation Program	Compliance with UWMP Act
A	Water Survey Programs for Single Family and Multi-Family Residential Customers	None at this time	B/C Ratio = 0.9
B	Residential Plumbing Retrofit	Rebates offered at the time of purchase for water saving devices	Yes
C	System Water Audits, Leak Detection and Repair	Goal to replace 1% of pipeline system annually	Yes
D	Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections	Residential Water Meter Program currently being implemented; majority of commercial, industrial, and landscape connections metered	In Process
E	Large Landscape Conservation Programs and Incentives	None at this time; Water Conservation Ordinance applies to large landscapes	B/C Ratio = 5.6
F	High Efficiency-Washing Machine Rebate Programs	None at this time	B/C Ratio = 0.7
G	Public Information Programs	Conservation information included in bill inserts, newsletters, brochures, demonstration gardens, special events, website	Yes

DMM	Demand Management Measure Description	City Conservation Program	Compliance with UWMP Act
H	School Education Programs	K-6 classroom presentations *Currently suspended until full-time Water Conservation Coordinator position is filled	Yes
I	Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts	Water surveys not offered at this time; ULFT replacement program is available to CII accounts.	B/C Ratio = 2.2
J	Wholesale Agency Programs	*Not Applicable*	*Not applicable*
K	Conservation Pricing	Meter implementation program will enable future conservation pricing	In Process
L	Water Conservation Coordinator	Position is currently vacant; part-time employees fulfill similar water conservation enforcement duties	Yes
M	Water Waste Prohibitions	Restrictions and penalties in place and enforced for wasted water; emergency conservation measures in place for emergency conditions	Yes
N	Residential Ultra-Low Flush Toilet Replacement Program	Rebates offered at the time of purchase for ULFTs	Yes

6.2 Demand Management Measures

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

Implementation Description:

Water survey programs typically involve residential interior and exterior water use reviews whereby staff assist homeowners in identifying potential leaks and areas for water savings. Interior fixtures are checked and leak tested and irrigation systems are evaluated. Residents are generally provided with recommendations for improvements, plumbing retrofit kits and water conservation literature. Such programs can be very labor intensive as they require time to set up appointments with residents, plus the actual survey and follow-up time.

The City does not currently have a residential water survey program in place.

Cost/Benefit Analysis:

Estimating the benefits from a residential water survey program is difficult because it is up to the individual customer to implement recommendations from a survey; therefore, results can vary widely. However, the CUWCC has estimated that the outdoor water use could be decreased by up to 10 percent for each unit surveyed. If 125 surveys are completed the first year, the outdoor water use could be decreased by approximately 4 AF. The number of surveys would increase at intervals throughout a ten year implementation program (based on CUWCC recommendations), with 450 surveys completed during the tenth year, resulting in savings of approximately 47 AFY. A snapshot of these potential savings is shown in **Table 6-2**.

Table 6-2: Cost-Benefit Analysis of DMM A

Water Survey Programs for Single Family and Multi-Family Residential Customers	
Total Costs	$113,879
Total Benefits	$101,077
Discount Rate	6.15%
B/C Ratio	0.89
Time Horizon (years)	13
Cost of Water (per AF)	$500
Average Water Savings (AFY)	25

The City does not currently budget for this program. The average cost of the survey program is estimated to be approximately $50 per survey. To complete the recommended 15 percent of the single-family unit surveys and 15 percent of the multi-family unit surveys over 10 years, it was assumed that the City would follow the implementation schedule provided by the CUWCC. Approximately 125 surveys would need to be completed the first year and 450 surveys in the tenth year. The life span of a water survey is approximately four years. This would result in a discounted cost of approximately $7,900 in the first year, and up to $17,040 in the tenth year. The benefit-to-cost (B/C) ratio is approximately 0.9. A B/C ratio below 1.0 is not considered cost-effective. The City does not have plans to implement a water survey program at this time.

Non-Economic, Environmental, Social, Health, Technological, and Customer Impact Factors:

As the City becomes fully metered, water survey programs may be a service requested by ratepayers. Additionally, as individual meter data will become available, the City will be able to monitor for large water users and may choose, at that time, to develop a program to offer surveys to these connections. This factor will be taken into consideration as DMMs are considered in the future.

Available Funding

The City does not currently budget for this program. Use of funds from the City's Water Conservation Program would require diverting resources from other DMMs. The only water supply project currently planned is the City's surface water treatment facility (SWTF), currently under construction. The City does not currently have any planned future water supply projects that would provide water at a higher cost than implementation of this DMM.

Legal Authority:

The City has the legal authority to implement this DMM.

6.2.2 DMM B: Residential Plumbing Retrofit

Implementation Description:

The City of Lodi's Water Conservation Rebate Program promotes the retrofitting of residential plumbing fixtures with low-flow and other water-saving devices, such as low-flow showerheads, hose bib manual timers for outside water hoses, and water heater blankets. Rebates of 50% of the cost of the device are given at the store at the time of purchase. The City of Lodi later reimburses the stores the cost of the rebate.

The number of rebates distributed has decreased significantly since 2005. Two causes have been identified for the decrease: two of the stores that were carrying the rebated items either went out of business or stopped participating in the program; and the economic downturn has generally reduced home improvement purchases. It is anticipated that more rebates will be distributed as the economy improves.

Methods to Evaluate Effectiveness:

The effectiveness of this program is based upon the number of rebates issued for water conservation devices and the percentage of customers that install the equipment after purchasing the devices. The City currently tracks the number of rebates distributed. As the City becomes fully metered, the effectiveness of this DMM may be evaluated by comparing metered water use for customers before and after installation of water saving devices.

Conservation Savings:

Because it is up to the individual customer to purchase and install conservation devices and with the current metering conditions, savings are difficult to quantify. The CUWCC estimates that a low-flow showerhead retrofit will save approximately 2.9 gallons per capita per day (gpcd) on post-1980 constructed homes and 7.2 gpcd on pre-1980 constructed homes. The average savings for a toilet retrofit is 1.3 gpcd on pre-1980 constructed homes only.

As summarized in **Table 6-3,** the City can expect to save approximately 0.2 AFY over the next five years through this DMM. Additional water savings could be realized if the number of rebates utilized were to increase.

Implementation Schedule:

The City's current rebate program is on-going.

Table 6-3 presents historical and projected data on the distribution and effectiveness of this DMM.

Table 6-3: Implementation of DMM B

Category	2006	2007	2008	2009	2010
Low Flow Showerheads [a,b]	10	2	0	0	0
Hose Bib Timers [a,c]	2	0	0	0	0
Hot Water Heater Blankets [a,d]	2	1	1	2	0
Method of Promotion	Rebate	Rebate	Rebate	Rebate	Rebate
Water Savings, AFY	0.4	0.9	0.5	0.3	0.1

Table 6-3 (Continued)

Category	2011	2012	2013	2014	2015
Low Flow Showerheads [a,b]	10	10	10	10	10
Hose Bib Timers [a,c]	5	5	5	5	5
Hot Water Heater Blankets [a,d]	5	5	5	5	5
Method of Promotion	Rebate	Rebate	Rebate	Rebate	Rebate
Water Savings, AFY	0.2	0.2	0.2	0.2	0.2

Footnotes:

a. Because rebates are offered at the store at the time of purchase, records for the rebate program did not distinguish between rebates accepted by single family or multi-family accounts.
b. Water savings assume a savings of 2.9 gpcd, and 3.5 people/dwelling unit (du).
c. Water savings assume a savings of 25 gpd/du, 3 watering days/wk, and 18 watering weeks/yr.
d. Water savings assume a savings of 3 gpcd, 3.5 people/du, and 1 shower/day.

Methods to Improve Effectiveness:

Outreach on the availability of the rebate program should be directed towards areas with older homes that are more likely to have older, less efficient fixtures installed. This targeting would maximize the benefit from these devices. Evaluation of residential water usage before and after rebates may be investigated following completion of the City's residential metering program. A direct-install program might also increase effectiveness.

6.2.3 DMM C: System Water Audits, Leak Detection and Repair

Implementation Description:

The City has implemented a capital improvement program to replace water lines, with an ultimate goal of replacing 1 percent of the system annually. Locations where current water main size are a problem (typically 2- and 3-inch diameter mains) are evaluated first. Next, mains which are in backyards, and therefore the hardest to access for maintenance and repair, are targeted. Finally, the City examines the frequency of call outs and interviews maintenance crews to determine which mains are most problematic. Projections for future water main surveying and replacement are included in **Table 6-4** below. The water/wastewater main replacement program was implemented in 2001.

Methods to Evaluate Effectiveness:

The best way to evaluate the effectiveness of this program is to compare water production data at the City's wells with water consumption from the City's customers. Without residential water meters in place to compare water supply and demand data, it is very difficult to evaluate the effectiveness of the pipeline replacement program. The City is in the process, however, of implementing a residential metering program. For more information on the City's metering implementation plans, see DMM D.

Conservation Savings:

Because the effectiveness of this DMM implementation cannot be determined without meters in place, savings have to be estimated. With over 25 thousand linear feet scheduled for replacement between 2010 and 2015, water savings will be realized. Assuming a one percent reduction in annual water production, savings in 2015 could be approximately 180 AFY.

Additional water savings could be realized if the amount of pipeline replaced were increased.

Implementation Schedule:

The City's Water Pipeline Replacement Program is currently on-going.

Table 6-4 presents historical data on the distribution and effectiveness of this DMM.

Table 6-4: Implementation of DMM C

Category	2006	2007	2008	2009	2010
Unaccounted-for Water	10%	10%	10%	10%	10%
Length of Mains Surveyed, ft	0	0	0	0	6,614
Length of Mains Replaced, ft	0	0	0	0	6,614
Water Savings, AFY	0	0	0	0	-- [a]

Table 6-4 (Continued)

Category	2011	2012	2013	2014	2015
Unaccounted-for Water	10%	10%	10%	10%	10%
Length of Mains Surveyed, ft	5,000	5,000	5,000	5,000	5,000
Length of Mains Replaced, ft	5,000	5,000	5,000	5,000	5,000
Water Savings [b], AFY	163	167	171	174	178

Footnotes:

a. Data unavailable.

b. Assumes a 1 percent reduction in annual demand based on water main replacement, based on discussions with City staff.

Methods to Improve Effectiveness:

The City should develop a regular leak detection program to focus work areas for the future.

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

Assembly Bill 2572

Assembly Bill No. 2572 (AB 2572) became law in 2004 and requires that all urban water suppliers install water meters on all residential, commercial, and industrial services constructed prior to 1992. According to the language in AB 2572, the City must:

- Install water meters by January 1, 2025 on all municipal and industrial water service connections constructed before 1992; and,
- On or before January 1, 2010, charge each customer that has a service connection for which a meter has been installed, based on volume of deliveries as measured by the water meter.

Implementation Description:

Installing water meters and billing for actual water use provides a strong incentive for customers to use less water and equalizes service costs for each customer to their actual use (high water users pay a more equitable share of the system costs). Water metering can reduce exterior landscape water use and can also achieve a modest reduction in interior water use.

The City currently meters and bills for actual water used for most of its commercial/institutional, industrial, and landscape customers. These customers are billed monthly based on a monthly service charge (based on meter size) and a quantity charge (based on actual water consumption). For these customers, actual water use is billed at one rate ($0.88 per 100 cubic feet, or $383 per AF). A few commercial customers are currently unmetered. The City is currently developing a schedule for installing water meters for unmetered commercial customers, likely upon completion of the City's residential Water Meter Program.

The City is in the process of implementing a residential metering program. Approximately 3,000 single family customers with existing meters were converted to usage-based rates in 2011, and each year during the meter retrofit program, additional customers will be converted to usage-based water rates. It is estimated that all single family residential customers will be transitioned to usage-based water rates by January 2019. Prior to converting any customer to usage-based rates, the City will provide the customer with actual water usage data and information regarding how the customer's bill may be affected with the change in billing.

Table 6-5: City of Lodi Water Service Residential Metered Rates

Type of Service Connection	Meter Size	Monthly Service Charge	Usage Charge (per 100 cu. ft.)		
			Tier 1 (0-10)	Tier 2 (11-50)	Tier 3 (>50)
Metered Residential Service Connection	½" meter	$ 19.27	$0.88	$1.32	$1.74
	1" meter	$ 28.90	$0.88	$1.32	$1.74
	1½" meter	$ 38.53	$0.88	$1.32	$1.74

Table 6-6: City of Lodi Water Service Commercial Metered Rates

Type of Service Connection		Monthly Service Charge	
Commercial Metered Service Connection	Commercial Metered Rate	$ 0.88	per 100 cu. ft.
	Monthly Base Charge[a]	$ 22.70	¾" meter
		$ 36.85	1" meter
		$ 57.50	1½" meter
		$ 71.85	2" meter
		$ 100.60	3" meter
		$ 129.35	4" meter
		$ 186.80	6" meter
		$ 244.30	8" meter
		$ 301.75	10" meter

Methods to Evaluate Effectiveness:

The best way to evaluate the effectiveness of metering is a periodic review of customer water use. The City intends to compare metered and unmetered water use on a regular basis as the meter program is implemented.

Conservation Savings:

Various studies have estimated water savings as a result of metering and commodity pricing. CUWCC has estimated that metered accounts may result in a 20 percent reduction in demand compared to non-metered accounts (CUWCC 2003). A 10% to 20% reduction in residential use could result in savings for the City of approximately 2,200 to 4,400 AFY in 2035, based on current unmetered usage.

Implementation Schedule

Billing at commodity rates for existing commercial/industrial customers is on-going; City is currently evaluating a schedule for installation of water meters at currently unmetered commercial customers.

Residential meter installation/billing began in 2011 and is expected to be fully implemented in 2017.

Table 6-7: Implementation of DMM D

Category	2006	2007	2008	2009	2010
Number of Unmetered Accounts [a]	22,397	22,419	22,453	22,497	22,336
Number of Retrofit Meters Installed [b]	0	0	0	0	0
Number of Accounts w/o Commodity Rates [c]	22,397	22,419	22,453	22,497	22,336
Number of Accounts w Commodity Rates	0	0	0	0	0
Water Savings, AFY	0	0	0	0	0

(continued on next page)

Table 6-7 (Continued)

Category	2011	2012	2013	2014	2015
Number of Unmetered Accounts [a]	17,009	13,336	10,660	8,605	6,649
Number of Retrofit Meters Installed [b]	3,071	2,073	1,453	1,354	874
Number of Accounts w/o Commodity Rates [c]	19,685	19,685	17,462	13,793	11,123
Number of Accounts with Commodity Rates	2,874	3,100	5,551	9,449	12,353
Water Savings, AFY[d]	146	158	255	347	414

Footnotes:

a. Assumes a 1.0% annual increase in the number of service connections. 2,874 meters installed on new accounts prior to 2011, but meters were not being read.
b. Based on the meter installation phasing in the City's Water Meter Program. Does not include 2,874 meters previously installed or meters installed during new construction.
c. Based on preliminary discussions with City staff, metered accounts will be billed at commodity rates beginning in January of the second year after installation (i.e. meters installed in 2011 will be billed at commodity rates beginning January 2013). Previously installed meters (for recently constructed houses), began commodity rate billing in January 2011.
d. Assumes 10% reduction in water use for metered customers.

Methods to Improve Effectiveness

The City is beginning to collecting meter data from residential customers as the meter program is being implemented to establish a baseline of water use for later comparison. Combining customer education and outreach (DMM G) with this DMM is likely to improve its overall effectiveness. The City intends to increase outreach efforts around the metering program and water conservation in general during implementation.

6.2.5 DMM E: Large Landscape Conservation Programs and Incentives

Implementation Description:

The City's Parks Division has implemented a water management program for major parks. The Division has installed "Maxicom" irrigation controllers, telecommunications equipment and related hardware and software to better manage park irrigation. In addition, the City's water conservation ordinance applies to large landscaped areas. Due to a shortage of staff and the priority of the water meter program, this DMM has not been implemented.

The City does not currently perform water conservation surveys for large landscapes, but does intend to initiate surveys when staffing and priorities allow.

Cost/Benefit Analysis:

CUWCC has estimated that surveys can reduce landscape water usage by 15 percent. If ten surveys are completed during the first year, the outdoor water use could be decreased by approximately 12 AF. Savings of approximately 47 AFY would be realized during the tenth year. A snapshot of these savings is shown in **Table 6-8**. To complete the recommended number of surveys over 10 years (15 percent of the total number of large landscape accounts), it was assumed that the City would follow the implementation schedule provided by the CUWCC.

Table 6-8: Cost-Benefit Analysis of DMM E

Large Landscape Conservation Programs and Incentives	
Total Costs	$26,678
Total Benefits	$150,207
Discount Rate	6.15%
B/C Ratio	5.6
Time Horizon (years)	13
Cost of Water (per AF)	$500
Average Water Savings (AFY)	34

The City does not currently budget for this program. The cost of a survey has been estimated at $250 per acre. Approximately 10 surveys would need to be completed the first year and 38 surveys in the tenth year. The life span of a large landscape water survey is approximately four years. This would result in a discounted cost of approximately $3,670 in the first year, and up to $2,590 in the tenth year. The benefit-to-cost (B/C) ratio is approximately 5.6. A B/C ratio above 1.0 is considered beneficial; therefore, the City should consider implementing this program.

Implementation Schedule:

Water Management Program for Major Parks:	On-going
Applicability of Water Conservation Ordinance to Large Landscapes:	On-going

Methods to Improve Effectiveness:

It is recommended that the City examine evapotranspiration information available from the California Irrigation Management Information System (CIMIS) to determine the water requirements for efficient turf and landscaping irrigation as weather conditions change over the year.

Non-Economic, Environmental, Social, Health, Technological, and Customer Impact Factors:

A program such as this may be requested by large landscape customers in the future. This factor will be taken into consideration.

Legal Authority:

The City has the legal authority to implement this DMM.

6.2.6 DMM F: High-Efficiency Washing Machine Rebate Programs

Implementation Description:

A typical high-efficiency washing machine rebate program entails offering a financial rebate to qualifying customers that install them in their homes. The City does not currently offer this program because it is not cost effective.

Cost/Benefit Analysis:

The cost/benefit analysis presented below reflects the following assumptions:

- each rebate will cost $75;
- a high-efficiency washing machine rebate will reduce water usage by 5,100 gallons per year;
- rebates will be accepted by one percent of single-family residences per year for 20 years;

- the lifespan of a high efficiency washing machine is 12 years.

Table 6-9: Cost-Benefit Analysis for DMM F

High-Efficiency Washing Machine Rebate Programs	
Total Costs	$118,077
Total Benefits	$86,445
Discount Rate	6.15%
B/C Ratio	0.7
Time Horizon (years)	18
Cost of Water (per AF)	$500
Average Water Savings (AFY)	24

The B/C ratio for this DMM is approximately 0.7. Since this B/C ratio is less than 1.0, it is not currently cost-effective for the City to implement this DMM.

Available Funding

The City does not currently budget for this program. Use of funds from the City's Water Conservation Program would divert resources from other, more cost-effective DMMs. The only water supply project currently planned is the City's surface water treatment facility, currently under construction. The City does not currently have any planned future water supply projects that would provide water at a higher cost than implementation of this DMM. The City could investigate if the local energy company would be interested in sharing the costs for a rebate program. Additionally, the City could pursue grant funding to support implementation of this DMM, if funding is available.

Non-Economic, Environmental, Social, Health, Technological, and Customer Impact Factors:

As the City becomes fully metered, this service may be requested by ratepayers as a means of reducing water consumption. This factor will be taken into consideration.

Legal Authority:

The City has the legal authority to implement this DMM.

6.2.7 DMM G: Public Information Programs

Implementation Description:

The City has an ongoing public information program that was first implemented in 1977. Representatives of the City's Water Conservation Program participate in local fairs, including the Crime Prevention Fair (sponsored by the City of Lodi Police Dept.), the Conservation Fair (sponsored by local agencies concerned with conservation), the Lodi Grape Festival and Harvest Fair, and other special events. Staff converse with fair visitors about Lodi's water conservation program and answer questions concerning water issues. The City also hands out information sheets, conservation kits and holds contests for prizes such as low-flow showerheads. Additionally, watering day reminders have been periodically included on the utility bills and on Lodi's cable TV station throughout the summer months. Newspaper articles and ads are also published throughout the year in Lodi's and Stockton's newspapers reminding Lodi residents of the water conservation regulations, offering conservation tips, and relaying the successes of the program. Refrigerator magnets with the watering day and hour schedules are given out by City staff and at the local fairs. The City's website has a Sustainable Water Use guide (http://www.lodi.watersavingplants.com/) that includes water saving tips for both indoor and outdoor use,

a native plant guide, and an interactive plant selection tool. The site is updated regularly with community events, such as classes on gardening and drought tolerant landscaping.

In addition, as part of the City's Water Metering Program, the City provides customers with several months of comparative water meter bills prior to implementing usage-based billing. These allow customers to compare their water bill under the flat billing rate with what their water bill would have been if they had been charged based on the City's usage based billing. This additional public outreach is intended to make the metering program more effective.

Implementation Schedule:

This program has been ongoing since 1977. The Sustainable Water Use website came online in late 2010. Other elements of the Program are ongoing.

Methods to Evaluate Effectiveness:

Evaluating the effectiveness of public information programs on consumer water use and behavior is difficult. The effectiveness of this program is currently evaluated by the amount of information available to the community. The City tracks the number of brochures distributed, special events attended, and other activities pursued to promote water conservation. The City also tracks customer response and any commentary regarding the information provided. In addition, the City tracks the number of visitors to the Sustainable Water Use guide on its website.

Conservation Savings:

CUWCC has not determined any methods to quantify the savings from this DMM; however, the City believes that this program is beneficial and necessary to implement other DMMs effectively.

Table 6-10: Historical and Projected Implementation of DMM G

Category	2005-06	2006-07	2007-08	2008-09	2009-10
Paid Advertising[a]	1	1	1	1	1
Bill Inserts/ Newsletters/ Brochures	20,000+ (CCR[b])	20,000+ (CCR[b])	20,000+ (CCR[b])	20,000+ (CCR[b])	20,000+ (CCR[b])
Bill showing Water Usage in Comparison to Previous Year's Usage [c]	1,095 x 12 mo.	1,105 x 12 mo.	1,115 x 12 mo.	1,125 x 12 mo.	1,135 x 12 mo.
Comparative Bill showing Water Usage Based Bill and Flat Rate Charge[d]	0	0	0	0	0
Demonstration Gardens[a]	1	1	1	1	1
Special Events/ Media Events[a]	3	3	3	3	3
Sustainable Water Use Website Visits	n/a	n/a	n/a	n/a	n/a

Footnotes:

a. Assumes a continuation of current practices.
b. "CCR" refers to the annual water quality report distributed to customers in bill inserts. Bill inserts always contain a water conservation section, but are not included as part of the Water Conservation Program budget.
c. Water usage bill comparisons for future years assume an increase of 10 comparisons x 12 months each year, similar to data from 2003-2005.
d. Based on number of existing customers with water meters installed in the previous year.
e. Total visits in January through May 2011.
f. Assumes an average of 200 visits per month based on preliminary 2011 data.

Table 6-10 (Continued)

Category	2010-11	2011-12	2012-13	2013-14	2014-15
Paid Advertising [a]	1	1	1	1	1
Bill Inserts/ Newsletters/ Brochures	20,000+ (CCR[b])	20,000+ (CCR[b])	20,000+ (CCR[b])	20,000+ (CCR[b])	20,000+ (CCR[b])
Bill showing Water Usage in Comparison to Previous Year's Usage [c]	1,135 x 12 mo.	1135 x 12 mo.	2,063 x 12 mo.	3,442 x 12 mo.	4,823 x 12 mo.
Comparative Bill showing Water Usage Based Bill and Flat Rate Charge[d]	0	0	602 x 6 mo.	602 x 6 mo.	602 x 6 mo.
Demonstration Gardens [a]	1	1	1	1	1
Special Events/ Media Events [a]	3	3	3	3	3
Sustainable Water Use Website Visits	1539[e]	2400[f]	2400 [f]	2400 [f]	2400 [f]

Footnotes:

a. Assumes a continuation of current practices.
b. "CCR" refers to the annual water quality report distributed to customers in bill inserts. Bill inserts always contain a water conservation section, but are not included as part of the Water Conservation Program budget.
c. Water usage bill comparisons for future years assume an increase of 10 comparisons x 12 months each year, similar to data from 2003-2005.
d. Based on number of existing customers with water meters installed in the previous year.
e. Total visits in January through May 2001.
f. Assumes an average of 200 visits per month based on preliminary 2011 data.

Methods to Improve Effectiveness:

Public information can be one of the best tools to promoting water conservation. The City can continue to improve its public information program by continuing to augment and update the water conservation information on the City's website. A citizens' advisory committee could assist in developing new ways to communicate with the public and the media about water conservation and other resource issues.

6.2.8 DMM H: School Education Programs

Implementation Description:

A Water Educational Program was introduced to Lodi elementary schools in 1986. This program supplements and enhances the City's total effort to conserve water as well as other natural resources. In 1986, four pilot schools were introduced to the program. Presentations have been given in 10 schools within the Lodi city limits. The program includes water science demonstrations with the objective of instilling water awareness and providing information about Lodi's water system and water conservation techniques.

The education program is aimed at grades K through 6, when it may be most effective in cultivating water awareness and the formation of good water habits.

Methods to Evaluate Effectiveness:

The effectiveness of this program is measured by the number of students and schools that participate. The City tracks the number of presentations and tours given, curriculum materials provided, and students that participate.

Conservation Savings:

CUWCC has not determined any methods to quantify the savings of this DMM, but the City believes that this program is beneficial to the community and important to the long-term success of the overall water conservation program.

Implementation Schedule:

Table 6-11: Implementation of DMM H

Category	2006	2007	2008	2009	2010
Grades K–6th	94	123	87	74	87

Table 6-11 (Continued)

Category	2011	2012	2013	2014	2015
Grades K–6th	93[a]	93[a]	93[a]	93[a]	93[a]

Footnotes:

a. Projections for this program represent the average number of classroom visits between 2005 and 2010.

Methods to Improve Effectiveness:

Similar to a public information program, a school education program can also be one of the best tools to conserve water. The American Water Works Association (AWWA) and the Water Education Foundation (WEF) provide educational material for youth to explain both the water cycle and pollution, and to promote water conservation, including videos, bookmarks, games, and water experiments. The City can continue to improve its school education program by including additional material available from AWWA and WEF. Filling the currently vacant Water Conservation Coordinator position (or a similar position) will also enhance the program by facilitating meetings with school principals and educators to promote classroom presentations.

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

Implementation Description:

The City's water conservation program and ordinance applies to all customers. Most of the largest customers are covered under other conservation mechanisms; however, the City will evaluate implementing additional programs as staff constraints and budgetary considerations permit. The cost/benefit analysis presented below was based on an ULFT retrofit program for commercial, industrial, and institutional (CII) accounts. The City has an ULFT retrofit program that has been available to CII accounts since April 2001. While there has been some activity by CII accounts in utilizing the ULFT program, there has not been an effort to target these accounts with specific promotional materials. The City does not currently perform water use surveys for CII accounts due to staffing limitations and priorities with the water meter program The City does intend to move forward with the appropriate surveys when staffing and priorities allow.

Cost/Benefit Analysis:

The B/C analysis presented below reflects the following assumptions:

- an analyst survey (for commercial and institutional accounts) costs $680 and will reduce annual water usage by 0.83 AF/account, while a consultant survey (for industrial accounts) costs $1,680 and will reduce annual water usage by 2.1 AF/account;
- the lifespan of a water use survey for CII accounts is approximately 4 years;
- approximately 10 percent of CII accounts will be surveyed over an eight-year period.

To complete the recommended number of surveys over eight years, it was assumed that the City would follow the implementation schedule provided by the CUWCC. This would result in a total of approximately 138 surveys.

Table 6-12: Cost-Benefit Analysis for DMM I

Conservation Programs for Commercial, Industrial, and Institutional Accounts	
Total Costs	$79,847
Total Benefits	$179,032
Discount Rate	6.15%
B/C Ratio	2.2
Time Horizon (years)	11
Cost of Water (per AF)	$500
Average Water Savings (AFY)	44

The B/C ratio for this DMM is approximately 2.2. A B/C ratio above 1.0 is considered beneficial; therefore, the City should consider implementing this program.

Non-Economic, Environmental, Social, Health, Technological, and Customer Impact Factors:

As the City becomes fully metered, this service may be requested by ratepayers as a means of reducing water consumption. This factor will be taken into consideration.

Available Funding

The City does not currently budget for this program. Use of funds from the City's Water Conservation Program would require diverting resources from other DMMs. The only water supply project currently planned is the City's surface water treatment facility (SWTF), currently under construction. The City does not currently have any planned future water supply projects that would provide water at a higher cost than implementation of this DMM.

Legal Authority:

The City has the legal authority to implement this DMM.

6.2.10 DMM J: Wholesale Agency Programs

This DMM applies to wholesale agencies only and is therefore not applicable to the City. The City's wholesale supplier is WID.

6.2.11 DMM K: Conservation Pricing

Implementation Description:

Since the majority of the City's non-residential customers are metered, the single-block commodity rate for water encourages water conservation. The City's wastewater billing policies for these customers also reflect water use, which provides an additional incentive for conservation. The City has developed a

tiered rate structure for single family residential customers, with escalating rates for customers who use more water.

Methods to Evaluate Effectiveness:

Conservation pricing is often cited as a means to have market mechanisms provide incentives for conservation. Water consumption, however, has a relatively inelastic demand relative to price, meaning as unit prices go up, unit demand does not correspond in a 1:1 linear fashion. This is due to a variety of factors. Only a portion of water use for a residence can be considered discretionary, generally a portion of landscaping use and excess showering periods and the like. Most use is simply a basic function of existence. At the point discretionary use has been rung out of the system due to marginal costs of water, another rate tier is unlikely to reap much conservation savings.

The City is currently implementing its Water Meter Program, which includes tiered water usage rates for single family residential customers. Evaluation of the City's water use before and after implementation of the program will provide information on the effectiveness of the City's rate structure.

Conservation Savings:

Water savings due to conservation pricing are difficult to determine, since the City is currently in the process of implementing its Water Meter Program. The CUWCC estimates that metering combined with usage-based pricing can result in savings of 20% (CUWCC 2003). Estimates of water savings from the metering program are provided under DMM D.

Implementation Schedule:

The City is currently implementing its Water Meter Program. Water meters for residential customers will be installed between 2011 and 2017. Implementation of usage based billing will occur between 2011 and 2019. The City is currently evaluating a schedule for meter installation on currently unmetered commercial customers. See DMM D for more information regarding the City's proposed metering implementation schedule.

Methods to Improve Effectiveness:

The City should consider developing tiered commercial rates keyed to actual water consumption to encourage water conservation for commercial customers in addition to the tiered rates already developed for residential customers.

6.2.12 DMM L: Water Conservation Coordinator

Implementation Description:

Although the City's Water Conservation Coordinator position is currently unfilled, several of the City's employees work part-time to perform many of the same duties. The Water Conservation Program was started in 1989.

Methods to Evaluate Effectiveness:

The effectiveness of this DMM is determined by the work performed by the Water Conservation Coordinator. Staffing levels for this program are included in **Table 6-13** below.

Conservation Savings:

CUWCC has not determined any methods to quantify the savings of this DMM, but the City believes that this program is beneficial to the community and important to the long-term success of the overall water conservation program.

Implementation Schedule:

The Water Conservation Coordinator is an on-going position currently being filled by employees working part-time on the program.

Table 6-13: Implementation of DMM L

Category	2006	2007	2008	2009	2010
Number of full-time positions	0	0	0	0	0
Number of part-time staff	4	4	4	4	4
Number of part-time staff in full time equivalents	1.1	1.1	1.1	1.1	1.1

Table 6-13 (Continued)

Category	2011	2012	2013	2014	2015
Number of full-time positions	0[a]	0[a]	0[a]	0[a]	0[a]
Number of part-time staff	4[a]	4[a]	4[a]	4[a]	4[a]
Number of part-time staff in full time equivalents	1.1[a]	1.1[a]	1.1[a]	1.1[a]	1.1[a]

Footnotes:

a. Projections for this program are based on the data from fiscal year 2010.

Methods to Improve Effectiveness:

The effectiveness of the Water Conservation Coordinator could be improved by filling the position with a full-time staff member and through greater coordination with other DMM programs such as school education and public information, DMM M: Water Waste Prohibitions

6.2.13 DMM M: Water Waste Prohibition

Implementation Description:

The City's existing Water Conservation Ordinance (Lodi Municipal Code, Chapter 13.08, Article III), defines water waste prohibitions for the City's customers. The Ordinance provides several definitions of "waste of water," outlines watering days and hours, describes the City's enforcement procedures, and discusses the processes of violations, infractions, and appeals. A copy of the City's Water Conservation Ordinance is included in **Appendix K.** This program was implemented in 1977.

Methods to Evaluate Effectiveness:

The effectiveness of this DMM can be determined by a decrease in the number of violations; the number of citations and violations should continue to be reported annually. If an area is determined to have excessive violations, the City should implement a specific public outreach program informing the public about the specific ordinance.

Conservation Savings:

The CUWCC has not determined any methods to quantify the savings of this DMM but the City believes that this program is necessary to curtail flagrant water waste situations. Per capita water usage, as outlined in Chapter 3, has decreased in recent years. Although it is difficult to extract the savings associated with individual DMMs from this reduction, it is reasonable to assume that a portion of the reduction is attributable to the City's Water Conservation Ordinance.

Implementation Schedule:

Table 6-14: Implementation of DMM M

Category	2006	2007	2008	2009	2010
Waste Ordinance in Effect	Yes	Yes	Yes	Yes	Yes
Number of On-site Visits	1,266	4,109	3,956	3,104	3,956

Table 6-14 (Continued)

Category	2011	2012	2013	2014	2015
Waste Ordinance in Effect	Yes	Yes	Yes	Yes	Yes
Number of On-site Visits	3,278 [a]	3,278 [a]	3,278 [a]	3,278 [a]	3,278 [a]

Footnotes:

a. Projections for this program represent the averaged data from fiscal years 2006 to 2010.

Methods to Improve Effectiveness:

The City should continue to monitor the effectiveness of this DMM. Coordination with other DMMs such as public information and the water conservation coordinator could increase effectiveness.

6.2.14 DMM N: Residential Ultra-Low Flush Toilet (ULFT) Replacement Programs

Implementation Description:

The City's Building Code requires that all new residential construction and major remodels or renovations of existing homes install low flow fixtures, including low flow toilets and showerheads. Additionally, the City offers a rebate program for water saving devices, including ULFTs, low-flow showerheads, hose bib timers, and water heater blankets. Rebates for 50 percent of the cost of the device are given at the store at the time of purchase. The City later reimburses the stores the cost of the rebate. This program was implemented in 2001.

The number of rebates distributed has decreased significantly since 2005. Two causes have been identified for the decrease: two of the stores that were carrying the rebated items either went out of business or stopped participating in the program; and the economic downturn has generally reduced home improvement purchases. It is anticipated that more rebates will be distributed as the economy improves.

Methods to Evaluate Effectiveness:

The effectiveness of this program is based upon the number of rebates issued for water conservation devices and the percentage of customers that install the equipment after purchasing the devices. The City currently tracks the number of rebates issued. As the City becomes fully metered, the effectiveness of this DMM may be evaluated by comparing metered water use for customers before and after installation of water saving devices.

Conservation Savings:

Programs such as these have been shown to produce savings of approximately 1.9 gallons per flush over high-water-using toilets. Estimates for the City's water savings as a result of the rebate program are provided in the table below. Additional water savings could be realized if there was an increase in the number of customers accepting ULFT replacement rebates. Reduced wastewater treatment and disposal is an additional benefit of this program.

Implementation Schedule:

The City's annual expenditures have been between $44 and $2,300 for the each of the last five years. The City's proposed expenditures for future years are shown in the table below.

Table 6-15: Implementation of DMM N

Category	2006	2007	2008	2009	2010
# of ULFT replacements [a]	53	21	16	2	1
Method of Replacement	Rebate	Rebate	Rebate	Rebate	Rebate
Water Savings, AFY	1.6	0.6	0.5	0.1	0.0

Table 6-15 (Continued)

Category	2011	2012	2013	2014	2015
# of ULFT replacements [a]	75	75	75	75	75
Method of Replacement	Rebate	Rebate	Rebate	Rebate	Rebate
Water Savings, AFY	2.2	2.2	2.2	2.2	2.2

Footnotes:

a. Because rebates are offered at the store at the time of purchase, records for the rebate program cannot distinguish between rebates accepted by single family or multi-family accounts.

Methods to Improve Effectiveness:

The City could realize more water savings if existing homes with high-water-using toilets were targeted with promotional material for the rebate program. To increase the number of retrofits for existing homes, the City should pursue any opportunities for grants. The City could use also use grants to facilitate the establishment of a direct-installation program.

6.2.15 Evaluation of DMMs Not Implemented

Table 6-16 provides a summary of the DMMs not currently being implemented by the City. The net present value (NPV) per AF associated with each DMM represents the total value (in 2010 dollars) of the lifetime water savings estimated for each DMM. For comparison, the DMMs with negative NPV/AF values in **Table 6-16** correspond to the B/C ratios of less than one shown in Table 6-2, and vice-versa. Demand measures A and F are not currently being implemented because they are not cost effective, but will be reevaluated in the future. Demand measures E and I are not being implemented due to staffing constraints and the priority of the water meter program. They will be implemented in the future when staffing and priorities permit.

Table 6-16: Evaluation of DMMs Not Implemented

DMM No.	Description	NPV per AF
A	Water Survey Programs for Single-family Residential and Multi-family Residential Customers	- $ 39
E	Large Landscape Conservation Programs and Incentives	$ 276
F	High-efficiency Washing Machine Rebate Programs	- $ 73
I	Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts	$ 203

Chapter 7 Completed UWMP Checklist

The following table, **Table 7-1**, contains the Urban Water Management Plan Checklist, organized by subject, for the City of Lodi's 2011 Urban Water Management Plan

Table 7-1: Urban Water Management Plan Checklist, organized by subject

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)		Section 1.2.1
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Section 1.3.1
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Appendix C
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		To be provided
55	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642		Appendix B
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Appendix B
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Appendix C
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		1.3.3

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)		To be provided
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		To be provided
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Section 2.1
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 2.2
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 2.3
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2.3
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		none
SYSTEM DEMANDS				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		Section 3.2
2	*Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Section 1.3.2

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		Section 3.9.4
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Section 3.3
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	not applicable
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Section 3.7
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Section 4.1
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Yes
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		Yes, Appendix G
16	Describe the groundwater basin.	10631(b)(2)		Section 4.3
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		No

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		not applicable
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Section 4.3
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		Section 4.3
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 4.3.2
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 4.4
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Section 4.7
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 4.5
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 4.6
45	Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)		Section 4.6.1

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Section 4.6.1
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		Section 4.6.3
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		Section 4.6.3
49	The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	10633(e)		Section 4.6.3
50	Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)		Section 4.6.3
51	Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)		Section 4.6.3
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING [b]				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Section 5.1
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 5.4.1
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)		Section 5.1
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Section 5.2

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)		Section 5.4.2
37	Identify actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)		Section 5.4.3
38	Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)		Section 5.2.2
39	Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)		Section 5.2.2
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Section 5.2.2
41	Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)		Section 5.2.3
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Section 5.2.4
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 5.4.4
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 5.3

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 5.4.5 Section 5.4.6 Section 5.4.7
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Chapter 6
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 6.2
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		Section 6.2
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Section 6.2
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	not applicable

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.

Chapter 8 References

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Appendix A - Notification Letters

CITY COUNCIL
BOB JOHNSON, Mayor
JOANNE MOUNCE,
Mayor Pro Tempore
LARRY D. HANSEN
PHIL KATZAKIAN
ALAN NAKANISHI

CITY OF LODI

MUNICIPAL SERVICE CENTER
1331 SOUTH HAM LANE
P.O. BOX 3006
LODI, CALIFORNIA 95241-1910
(209) 333-6740
FAX (209) 333-6841
EMAIL pwdept@lodi.gov
http:\\www.lodi.gov

KONRADT BARTLAM,
City Manager

RANDI JOHL,
City Clerk

D. STEPHEN SCHWABAUER,
City Attorney

F. WALLY SANDELIN,
Public Works Director

March 7, 2011

Mel Lytle, Ph.D.
Water Resources Coordinator
Northeastern San Joaquin Groundwater Banking Authority
1810 E. Hazelton Avenue
P. O. Box 1810
Stockton, CA 95201

Subject: Urban Water Management Plan Update

Dear Dr. Lytle,

Existing State law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Lodi (City) is currently preparing an update to its 2005 Urban Water Management Plan (UWMP). A copy of the 2005 Urban Water Management Plan (UWMP) is available at the City's website: http://www.lodi.gov/public_works/water.html. The UWMP documents the City's plan to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

California Water Code Division 6, Part 2.6, Section 10620 requires urban water suppliers to coordinate preparation of UWMPs with appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable. The City is a member of the Northeastern San Joaquin Groundwater Banking Authority (GBA), and consistent with the water code requirements, is notifying the GBA that our UWMP is currently being updated. We anticipate having a draft plan available for public review in May 2011. The final plan will be submitted to the California Department of Water Resources by July 1, 2011.

Please contact me at 209-333-6800, Ext. 2091, if you have any questions about the City's Urban Water Management Plan update.

Sincerely,

Kathryn E. Garcia, P.E.
Compliance Engineer

KMG/SS/dsg

cc: Charles Swimley, Deputy Public Works Director-Utilities

R:\GROUP\WWW\Urban Wtr Management Plan\UWMP Update 2010\2010 UWMP Notification Letter to GBA.doc 3/8/2011

CITY COUNCIL
BOB JOHNSON, Mayor
JOANNE MOUNCE,
Mayor Pro Tempore
LARRY D. HANSEN
PHIL KATZAKIAN
ALAN NAKANISHI

CITY OF LODI

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KONRADT BARTLAM,
City Manager

RANDI JOHL,
City Clerk

D. STEPHEN SCHWABAUER,
City Attorney

F. WALLY SANDELIN,
Public Works Director

January 25, 2011

Kerry Sullivan
San Joaquin County Community Development Department
1810 E. Hazelton Avenue
Stockton, CA 95205

Subject: 2010 Urban Water Management Plan Update

Dear Ms. Sullivan;

Existing State law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Lodi (City) is currently preparing an update to its 2005 Urban Water Management Plan. A copy of the 2005 Urban Water Management Plan (UWMP) is available at the City's website: http://www.lodi.gov/public_works/water.html. The UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the County within which the City provides water supplies that the UWMP is being reviewed and updated. We anticipate having a draft plan available for public review in May 2011. The final plan will be submitted to the California Department of Water Resources by July 1, 2011.

Please contact me at 209-333-6800, Ext. 2091, if you have any questions about the City's Urban Water Management Plan update.

Sincerely,

Kathryn E. Garcia, P.E.
Compliance Engineer

KMG/SS/dsg

Appendix B - Public Outreach and Public Notices

Tuesday, January 25, 2011

2010 Urban Water Management Plan Update

The City of Lodi is currently preparing the 2010 Urban Water Management Plan Update. The City is required to update its Urban Water Management Plan (UWMP) every five years per State law. The UWMP is prepared to ensure the efficient use of available water supplies, describe and evaluate the existing water system and historical and projected water use, evaluate current and projected water supply reliability, describe and evaluate demand management measures, and provide water shortage contingency plans as required by State law.

By preparing the UWMP Update, the City continues its commitment to intelligent planning and management of its water supplies.

For more information, please contact Kathryn Garcia P.E., Compliance Engineer, at 209-333-6740 or kgarcia@lodi.gov

Where does the City of Lodi's water supply come from?

26 computer controlled wells, located throughout the City, provide high quality groundwater, our sole source of supply in 2005. The wells operate automatically so that when water use increases, more wells come on line. However, the groundwater basin is being depleted. The City has purchased rights to some surface water from the Mokelumne River. Currently, the City is studying the most effective use of this surface water. The water delivered to your tap meets or is better than all federal and state water quality standards.

For more information on Water Quality please click on the link below:

2009 Water Quality Report (published March 2010)

Public Health Goal Report

Water Meter Retrofit Program

The City of Lodi has begun installing water meters on all unmetered properties in its service

area. This is in accordance with California Assembly Bill 2572, which requires the installation and use of water meters throughout the State. To date, 400 residential water meters have been installed as part of the City's Water Meter Retrofit Program. This is in addition to the existing 1,100 commercial and industrial meters. By January 1, 2025 the law requires that all remaining customers be charged based on a metered rate each month. This massive undertaking will affect approximately 17,000 of Lodi's water customers and millions of water users state-wide.

AB 2572 was signed into law by Governor Schwarzenegger in September 2004 to reduce water-waste and encourage conservation. Studies by the California Public Utilities Commission have shown that communities with metered water systems use 7 to 20 percent less water than non-metered areas. All residential and many commercial customers are currently charged a flat-rate fee for water, which is billed monthly, based on the number of bedrooms being served, regardless of how much water they use. For example, a single person living in a four bedroom home is being charged more than a family of four living in a three bedroom home. A metered system discourages waste and rewards conservation by accurately measuring water usage and billing each household and business based on their actual water consumption. Customers are probably already familiar with this type of "usage billing" for other utility services like electricity, gas and telephone.

The City of Lodi provides very high quality water to over 62,000 people. By working to conserve this critical resource, our residents can continue to count on a reliable supply of high quality drinking water for generations to come.

Continue to check this website for updates on the program.

Contact Us | Accessibility Policy | Disclaimer | Privacy Policy

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PROOF OF PUBLICATION

(2015.5 C.C.C.P.)

STATE OF CALIFORNIA

County of San Joaquin

I am a citizen of the United States and a resident of the County aforesaid: I am over the age of eighteen years and not a party to or interested in the above entitled matter. I am the principal clerk of the printer of the Lodi News-Sentinel, a newspaper of general circulation, printed and published daily except Sundays and holidays, in the City of Lodi, California, County of San Joaquin and which newspaper had been adjudicated a newspaper of general circulation by the Superior Court, Department 3, of the County of San Joaquin, State of California, under the date of May 26th, 1953. Case Number 65990; that the notice of which the annexed is a printed copy (set in type not smaller than non-pareil) has been published in each regular and entire issue of said newspaper and not in any supplement thereto on the following dates to-wit:

July 9th,

all in the year 2011.

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

Dated at Lodi, California, this 9th day of July 2011.

Diane Rosales

Signature

This space is for the County Clerk's Filing Stamp

Proof of Publication
Public Hearing to Consider Resolution Adopting 2010 Urbran Water Management Plan Update

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that on **Wednesday August 3, 2011**, at the hour of 7:00 p.m. or as soon thereafter as the matter may be heard, the City Council will conduct a public hearing at the Carnegie Forum, 305 West Pine Street, Lodi, to consider the following matter:

a) Resolution Adopting 2010 Urban Water Management Plan (UWMP) update.

California state law requires each urban water supplier to prepare and adopt a UWMP plan every five years. The UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. This year, the UWMP also includes information related to the 20 percent by 2020 conservation requirement of the Water Conservation Bill of 2009. A summary of the UWMP, including the City's plans to achieve the 2020 conservation targets, will be presented at the public hearing.

The draft 2010 UWMP is available for public review and written comments will be accepted from June 2, 2011 to August 3, 2011. The 2010 UWMP is available at the City's website: http://www.lodi.gov/public_works/water.html. A hard copy is also available for review at the City Clerk's office, located at 221 W. Pine Street, Lodi, CA.

The City welcomes your input on the draft plan. Please send written comments to Kathryn Garcia at kgarcia@lodi.gov or Public Works Department, 1331 South Ham Lane, Lodi, 95242-3995 by August 3, 2011. Written statements may also be filed with the City Clerk, City Hall, 221 West Pine Street, 2nd Floor, Lodi, 95240, at any time prior to the hearing scheduled herein, and oral statements may be made at said hearing.

If you challenge the subject matter in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice or in written correspondence delivered to the City Clerk, 221 West Pine Street, at or prior to the close of the public hearing.

By Order of the Lodi City Council

Randi John, City Clerk

09527

Appendix C - Resolution of Adoption of 2010 UWMP

RESOLUTION NO. 2011-128

A RESOLUTION OF THE LODI CITY COUNCIL
ADOPTING THE CITY'S 2010 URBAN WATER
MANAGEMENT PLAN UPDATE

==========

WHEREAS, several years ago, the California Legislature enacted Assembly Bill 797, and as subsequently amended, created Water Code Section 10610, et seq., known as the Urban Water Management Planning Act; and

WHEREAS, this Act requires the City of Lodi to review and update the Urban Water Management Plan every five years. The current update contains recently-revised guidelines for calculating water-reduction targets, which extended the submittal due date to August 1, 2011. This is the fifth update of Lodi's Urban Water Management Plan and was performed with the assistance of RMC Water and Environment. The adoption process requires a public hearing and adoption by Council; and

WHEREAS, the Urban Water Management Plan outlines Lodi's historical and projected population, water supply and demand, water shortage contingencies, and demand management measures implemented by the City. This plan also addresses water use reduction targets being required by the State for reductions of 15 percent by 2015 and 20 percent by 2020.

NOW, THEREFORE, BE IT RESOLVED that the Lodi City Council does hereby adopt the City of Lodi's 2010 Urban Water Management Plan Update on file in the Public Works Department.

Dated: August 3, 2011

==========

I hereby certify that Resolution No. 2011-128 was passed and adopted by the City Council of the City of Lodi in a regular meeting held August 3, 2011, by the following vote:

AYES: COUNCIL MEMBERS – Hansen, Katzakian, Nakanishi, and Mayor Johnson

NOES: COUNCIL MEMBERS – None

ABSENT: COUNCIL MEMBERS – Mounce

ABSTAIN: COUNCIL MEMBERS – None

RANDI JOHL
City Clerk

The foregoing document is certified to be a correct copy of the original on file in the City Clerk's Office.
Jennifer M. Robison
Assistant City Clerk, City of Lodi

By: Jennifer M. Robison
Dated: 8/4/11

Appendix D - Recycled Water Service Agreement

CITY COUNCIL
LARRY D. HANSEN, Mayor
PHIL KATZAKIAN,
Mayor Pro Tempore
SUSAN HITCHCOCK
BOB JOHNSON
JOANNE MOUNCE

CITY OF LODI

PUBLIC WORKS DEPARTMENT
CITY HALL, 221 WEST PINE STREET / P.O. BOX 3006
LODI, CALIFORNIA 95241-1910
TELEPHONE (209) 333-6706 / FAX (209) 333-6710
EMAIL pwdept@lodi.gov
http://www.lodi.gov

BLAIR KING,
City Manager

RANDI JOHL,
City Clerk

D. STEPHEN SCHWABAUER,
City Attorney

F. WALLY SANDELIN,
Public Works Director

July 24, 2009

Ed Warner
NCPA Lodi Energy Center
661 Commerce Drive
Roseville, CA 95678

Subject: Agreement to Serve Recycled Water to NCPA

Subject to agreement of business terms, the City of Lodi has agreed to serve recycled water to NCPA's Lodi Energy Center (LEC). NCPA will be submitting a Supplement to the Application for Certification (AFC) with the California Energy Commission (CEC). The City of Lodi can supply the required 1800 acre feet of recycle water per year that is contained in the AFC Supplement.

The City of Lodi currently serves NCPA's STIG facility, the San Joaquin County Mosquito and Vector Control facility, and adjacent City owned agricultural land with recycled water. As discussed in a meeting held between NCPA and the City of Lodi on July 13, 2009, the City of Lodi has sufficient capacity to serve both the LEC plant as well as existing users even with the increased water need resulting from the change in equipment described in the AFC Supplement. This commitment will not adversely affect any existing or future planned recycled water users.

We trust that this addresses the CEC's request. If you need additional information please do not hesitate to contact me at (209) 333-6740.

Sincerely,

F Wally Sandelin

for Charles E. Swimley Jr., P.E.
Water Services Manager

RECEIVED
JUL 27 2009
CITY OF LODI
MUNICIPAL SERVICE CENTER

K:\WP\LETTERS\LRecycledWatertoNCPA.doc

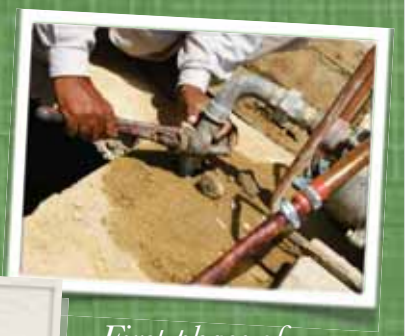
7/24/09

Appendix E - Water Meter Program Outreach Materials

Water Meter News

WINTER 2011 A COMMUNITY NEWSLETTER ON THE CITY OF LODI'S WATER METER PROGRAM ISSUE 3

Lump-sum payments for meters must be made by June 30



First phase of meter construction beginning this spring

Decide your meter payment option soon

Property owners will have two options this year to pay for the installation of their water meters, either by paying the $300 cost up-front, or by stretching payments over three years.

In April, the City will be notifying property owners if they are subject to the $300 meter cost and, if so, their payment options.

Property owners who need a meter may make a lump-sum meter payment of $300 before June 30, 2011. If full payment is not received by then, the property owner will be billed $8.53 a month for three years beginning in July 2011.

If the property owner lives in the same residence, the fee will be included in the monthly utility bill. If the property is a rental unit, the property owner will receive a separate bill. The City of Lodi will not bill renters for the cost of meter installation.

As outlined in previous issues of Water Meter News, the City of Lodi's Water Meter Program is a response to the State of California mandate that cities begin billing residents for their actual water meter use, and phase out flat-rate billing.

Nearly 3,000 homes began paying usage-based bills this year, as required by state law. Meters have been included in the cost of every home built since 1992, and those homes are now being billed for their actual water use.

The next phase of the City of Lodi's meter program involves homes built before 1992. Last October, the Lodi City Council voted to extend the meter installation program through 2017 and cap property owners' meter installation cost at $300 to minimize the potential financial impact on residents.

Another change is the City will not offer a subsidy for low-income property owners. The City has already lowered the cap from $1,200 to $300, but further subsidy of the cost of meter installation would involve federal funds that carry overly burdensome regulatory hurdles that would cost more than the value of any grants.

Finally, the opportunity residents had in 2010 to hire a qualified contractor to install their meters has ended. On the reverse side, residents can read more about how to obtain a refund if they paid in excess of $300 to have this work performed.

Want more information?
Visit www.lodi.gov/meters. for FAQ's and documents related to the City of Lodi's Water Meter Program.

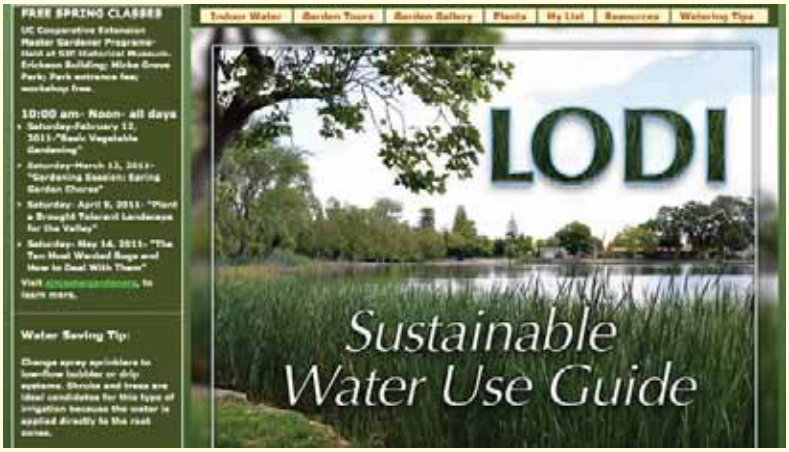
Questions? Call Tom Dugan, Water Meter Program Administrator
(209) 333-6800, ext. 2659; email tdugan@lodi.gov

Lodi's water website offers money-saving tips, ideas

The City of Lodi's Public Works Department has a new website available to help residents reduce their water use, whether inside the home or out.

Visit **www.lodi.watersavingplants.com** for cost-effective tips on keeping your landscaping green. Most water delivered to homes is used to keep plants irrigated.

The website also includes a calendar of events and water reminders, as well as links to other sites that offer water-saving suggestions and calculators.



Nearly 3,700 water meters being installed in 2011

Those homes south of Kettleman Lane that don't already have water meters, and pockets of homes built before 1992 in west Lodi are part of the first of seven water meter installation phases.

Phase 1 is expected to last from April through October, adding 3,698 meters and replacing 4,220 feet of water mains. This area was selected for the first phase of the meter installation program because most homes are served by water lines that can easily be outfitted with meters. Residents in Phase 1 will begin paying a metered rate for their water in January 2013.

A map of the City's seven phases is available from the Document Library at **www.lodi.gov/meters**.

Lodi residents will soon notice construction associated with this phase, which will require less street trenching than future phases. South of Kettleman Lane, residents will see School, Sacramento and Lowe streets, and portions of Elgin and Valley avenues opened to relocate water mains from back yards.

In other areas of Phase 1, work will generally be limited to areas near sidewalks. Minor front yard excavating may be needed to accommodate meters. For a majority of residents, water service will be interrupted for a brief period. In some cases, however, water may be turned off for several hours.

To allow the community to plan for this work, construction/installation crews will give residents 72-hour warning of water shut-offs by placing a doorknob hanger notice on each residence. The schedule of work in neighborhoods has not yet been determined, but details will be posted on the City of Lodi's water meter website, www.lodi.gov/meters, when available.

Wastewater billing method changing for metered residents

Residents with water meters will see a change in the way their wastewater, or sewer, charge is calculated in upcoming years.

Like electricity and now with water, residents will pay based on their consumption or, in the case of wastewater, their volume of discharge. Heavy water users have a disproportionate impact on the wastewater system, and will be billed accordingly.

Those residents living in homes built since 1992, and who are already being billed for their water use, will see their wastewater charge calculation change in July 2012. The rate will be in effect for one year and will be based on the average amount of water they use in December 2011, January 2012 and February 2012, when landscaping needs are minimal.

If a resident's water consumption changes the next winter, the wastewater rate will reflect that difference the following July for another year.

You may be entitled to a reimbursement

Property owners who contracted their meter installation during 2010 or who installed water meters as a condition of a City-issued building permit are likely eligible for reimbursement of a portion of that cost.

If either of these conditions apply, the property owner who paid for the installation must submit a written reimbursement request to the Public Works Department and attach documentation to support the request.

Requests may be dropped off or mailed to City of Lodi, Public Works Department, 221 W. Pine St., P.O. Box 3006, Lodi, CA 95241.

Water saving facts

- If you use a low-flow showerhead, you can save up to 15 gallons of water during a 10-minute shower.
- Shorten your shower by a minute or two and you'll save up to 150 gallons a month (1,800 gallons a year).
- Test your toilet for leaks by placing a drop of food coloring in the tank. If you see the color seeping into the toilet bowl before you flush, you have a leak.

Fixing the leak can save up to 1,000 gallons a month.

Water meter program

State law and the City of Lodi's water meter plan

Since 1992, State law has required water meter installation as part of all new construction. In 2004, the Legislature passed AB 2572, requiring all water suppliers to install water meters on all customer connections by January 1, 2025.

The law requires all metered services billed at a metered rate, so that water bills reflect water consumption. The City of Lodi currently charges residential customers a flat rate based on the number of bedrooms in the dwelling.

Here are answers to some questions you may have about the City's water meter installation program:

Q: Why do we need to install and pay for water meters?
A: Because state law is requiring water systems to charge customers based on the amount of water they use. Thousands of Lodi property owners paid for their meters when their homes were built (especially all those since 1992), so they won't need to pay again.

Q: Will all properties receive a water meter under the Water Meter Program and when will the meters be installed?
A: The City will equip all municipal water service connections with a water meter before 2026, the state-mandated deadline. Lodi's Water Meter Program will be installing a water meter at single-family detached homes, duplexes, triplexes and four-plex dwellings. Water meters will be installed by phase (seven phases are planned) starting in 2011 and are expected to conclude in 2017. View a map illustrating the installation schedule here.

Q: Who will be responsible for the water meter payment and when will the water meter payments begin?
A: Property owners will be responsible for paying $300 for their property's water meter. A property owner will have the option of making either a lump sum payment (April 1, 2011 through June 30, 2011) or a monthly payment ($8.53/month) for three years starting July 2011. Property owners will either receive a unique water meter bill or have the meter payment bill included on their regular utility bill.

Document Library

Read the winter issue of Water Meter News

Map showing year of meter installation (magnify for additional street level detail)

AB 2572 (2004 water meter law)

Privately contracted installation guide

Water meter installation timeline

Sept. 29, 2004	AB 2572, mandating water meters in all California cities by 2025, signed into law. Law requires homes built since 1992 to have usage-based water billing by 2011.
May 2, 2007	City Council approves meter installation policy: — Install within four years; — Property owners pay for meters; — Private contractor install for one year; — Payment terms
2010	Property owners may hire a contractor for meter installation
Dec. 1, 2010	Deadline to submit Notice of Intent to Privately Contract postcard to the Program Administrator
Dec. 31, 2010	Deadline to complete installation (improvements must be accepted by City in January 2011)
2011 through	City installation of water meters, new water mains

Q: Will the City be offering any financial assistance for low income residents?
A: No. Federal funds initially identified as a source for grants are not feasible for this project.

2017

Need more information?

Contact: Tom Dugan
Water Meter Program Administrator

Phone: (209) 333-6800, ext. 2659

Hours: M-F, 9 a.m.-5 p.m.

E-mail: Program administrator

Q: As part of a building permit I was required to pay a water meter deposit that exceeded the $300 and water service fee. Will the City reimburse me and when will my meter be installed?
A: Property owners who have paid for a meter, but whose meters have not been installed will have their meter installed during the respective meter installation phase. The City will reimburse eligible property owner the difference in their water meter deposit in excess of $300. The City will not be reimbursing property owner for the water service fee as that was a requirement of issuing the building permit. Eligible property owners will be receiving a letter in 2011 informing them of their eligibility.

Q: Will low-density multi-family structures (duplex, triplex, four-plex) be allowed to have each unit metered?
A: Yes, a property owner may elect to individually meter each unit. A property owner would be required to obtain the necessary building and encroachment permits from the City to have an individual service connection for each unit.

Q: Who will be responsible for paying the water utility bill?
A: For a single-family detached home, the water utility bill would either be paid by the owner or can be the responsibility of the tenant renting the property. For low-density multi-family dwellings (duplex, triplex, four-plex) that are master metered, the property owner would be responsible for the water utility bill. If each unit is individually metered, the owner may elect to have the tenant assume responsibility of the water utility bill.

Q: Who will be responsible for paying the balance of my water meter payment if the property is sold?
A: The property owner would be responsible for pay the balance of the water meter prior to having his or her water service account closed or transferred to another property.

Q: How do I know if I will be charged for a meter, and how much it will cost?
A: If your house was built after 1992, the City may already have collected a charge for a meter and the plumbing service probably is compatible with a meter. For these homes, there will be no installation charge. For homes built prior to 1992, the property owner will be charged $300 for a water meter. Property owners will receive a letter in spring 2011 notifying them if the charge applies.

Q: What does it mean to "upgrade" my water service?
A: Upgrading service means modifying the outdoor water service line to include connections for a meter that will be placed in a utility box. There are approximately 11,000 water services in Lodi that need upgrading, most of them on homes built before 1979.

Q: How do I know if I need to upgrade my water service?
A: Look near your sidewalk, back fence or alley. If you have a round cast-iron valve box approximately 5 inches in diameter, your service will need upgrading. If you have a concrete cover or steel lid to a rectangular concrete box approximately 25 inches by 16 inches, your service is probably meter-ready.

Q: Can I arrange for my own installation?
A: Not any more. The City provided an opportunity for the meter to be installed by a plumbing contractor in 2010, but that program has ended to allow the City to bid a precise number of properties for meter installations. Residents will find the cost of the City installation to be less expensive than what a private contractor can do for a single job.

Q: My house has a meter box that is configured to have a meter installed, but currently does not have a meter. Why won't the City let me install it myself?
A: Because the City's water system is minimally chlorinated, it is susceptible to contamination if a meter is not properly disinfected prior to going on-line.

Q: This is a water meter program. Why are the water main lines being upgraded?
A: The water utility collects money to repair, replace, and make improvements to the City's water service infrastructure in an effort to ensure reliability. Currently, there are many miles of mainline pipe that need replacing and/or are undersized. The City will abandon and relocate these pipes into the streets fronting the residence. This work will occur concurrently with the meter program to minimize disturbance on Lodi's residents.

Q: Currently, some residences have water meters and are receiving usage-based bills in 2011. The remaining residences will have water meters installed in phases over the next seven years. It seems unfair that some residents will be billed on a flat-rate while others are charged on a usage base. Why not start billing everyone based on usage at one time?
A: State law requires residences constructed after 1992 to be billed on a usage-based system by January 2011. The Lodi City Council is aware that two different water billing structures will occur for a period of time. Therefore, the Council chose to minimize the time period that the two billing structures would occur.

Q: As part of a building permit, the City charged a water service and meter fee to upgrade my water service to comply with City standards. The Water Meter Program will be relocating the mainline servicing my house. Will I be required to pay for the new service connection?
A: No. Your building permit fee to upgrade the water service connection constitutes you as "pre-paid." You will not be charged again.

Q: Will the water meters be equipped to be remotely read?
A: Yes, the City is equipping the water meters with the capability of being remotely read with a drive-by or walk-by device. The water meters and electric meters will ultimately transmit their readings to a centralized computer.

Q: Will my water bill go up?
A: That depends on your current rate –based on the number of bedrooms in your home – and how much water you use. The cost of supplying water is not changing, so the City needs to collect the same amount of money to properly operate the system as it does now. To help people understand how much water they use, and how much that will cost, the City will phase in consumption-based bills. Residents will know how much water they use, and the equivalent usage-based cost, for several months before the metered rate takes effect. If you have a meter, you can view your past water use at www.lodi.gov/water/watercompare.asp. A sample of this page is provided here.

Q: Will I be able to read my meter?
A: Yes. The meters will have dials similar to odometers on older automobiles. Also, the meters will have leak detectors that will show if water is flowing to your home even with all plumbing fixtures shut off. For billing purposes, meters will be read electronically.

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Appendix F - WID Agreement

FIRST AMENDMENT TO AGREEMENT FOR PURCHASE OF WATER FROM WOODBRIDGE IRRIGATION DISTRICT BY CITY OF LODI

This First Amendment to the May 13, 2003 Agreement for Purchase of Water from the Woodbridge Irrigation District by the City of Lodi is entered into by the parties this 17th day of JANUARY, 2008.

WHEREAS, the parties entered into an Agreement for Purchase of Water from the Woodbridge Irrigation District by the City of Lodi on May 13, 2003 ("2003 Agreement") providing that Woodbridge Irrigation District (District) would provide 6,000 acre feet of water per year to the City of Lodi (City), subject to dry year curtailments and the City's ability to take the water, under the terms set forth in the 2003 Agreement, for a period of forty (40) years (until May 13, 2043); and

WHEREAS, Section 8.a of the 2003 Agreement allowed the City to bank up to 18,000 acre feet of unused water during the initial three years under the 2003 Agreement, to allow the City time to develop its plans for utilization of such water; and

WHEREAS, the City has taken more time than anticipated to study alternative methods of using the water provided by the District, including groundwater recharge or by direct use after treatment, and consistent with the District's recommendation, the City has determined that its preferred alternative is to construct treatment works and deliver the treated water to the City's customers, but the City has not yet finalized its plans for utilizing the 6,000 acre-feet of water per year made available under the 2003 Agreement; and

WHEREAS, City expects to commence using the water purchased under the 2003 Agreement within the next four years, and the City has requested that the term of the 2003 Agreement for the purchase of the water from the District be extended for approximately four years, to October 15, 2047, and that it also be allowed until October 15, 2047 to bank any unused water under the Agreement for later usage; and

WHEREAS, the District is also currently negotiating an agreement with the City of Stockton for the sale of surplus water of the District to Stockton, and it is necessary to make some changes to the District's 2003 Agreement with Lodi so that the contract rights to the two Cities will not be in conflict with each other;

NOW, THEREFORE, THE CITY OF LODI AND THE WOODBRIDGE IRRIGATION DISTRICT AGREE AS FOLLOWS:

1. The final sentence of Section 1 of the 2003 Agreement is amended to read as follows:

   Any of such water which is not taken by the City in that initial year shall be included as a part of the 18,000 acre feet of carryover water which the City may

take at a later date as provided for in paragraph ~~6.a.~~ 8 hereof.

2. The first sentence of Section 3 is amended to read as follows:

The District agrees to deliver the water to the City at the location of the District's new fish screen at the Main Canal Intake Headworks at 18750 North Lower Sacramento Road, Woodbridge, and also at any ~~a~~ mutually agreeable location or locations on the District's Canal that may ~~to~~ be determined at a later date.

3. Subsection b of Section 3 is amended to read as follows:

b. At such times as it is possible for the District to deliver water during the remaining months of the year, or to deliver water in excess of 6,000 acre feet during the period from March 1 through October 15, then by mutual agreement of the parties, delivery of such water to the City may be made by the District. The City shall pay the District $100 per acre foot for any such additional water delivered to the City. The determination of whether any such water is available for delivery shall be made solely by the District. In the event that both the City of Lodi and the City of Stockton request any such available water during the same period(s) that the water can be delivered, the water shall be apportioned between them if necessary in the manner and times that they shall agree upon. In the event they do not agree, such water shall be apportioned between them by the District in the ratio of 50/50, or one-half to each; provided that, if such apportionment would result in either party losing any deficiency curtailment water banked to the credit of that party because of non-use within the required eight-year period under Section 8.b., that party shall have a first right to such portion of the available water that will avoid such loss.

4. Sections 4(a) and 4(b) of the 2003 Agreement ("Term of Agreement") are amended to read as follows:

4.(a) This Agreement shall be effective from the date of execution hereof, and shall remain in effect ~~for a term of forty (40) years from said date~~ until October 15, 2047, unless extended. Payment by the City for the water made available by the District during the four-year extension under this Amendment, i.e., until October 15, 2047, will continue to be on the same terms as provided in Section 1 of the 2003 Agreement, to wit, the basic payment of $1,200,000 per year as escalated annually commencing on January 1, 2010, as provided in Section 3.e of the 2003 Agreement.

4.(b) Upon receipt by the District of a written notice and request for renewal from the City at least two years in advance of the termination of the Agreement, the District agrees to ~~negotiate with the City for a renewal of~~ renew this Agreement for an additional forty (40) year term, on terms and conditions that are reasonable and equitable, ~~and which are satisfactory to the District.,~~ provided that the price for the water upon renewal will be at the then fair market value of the

water, but not less than the price being paid by Lodi under the 2003 Agreement (said new price to also be adjusted thereafter in accordance with the CPI formula in the existing Agreement).

5. A new Section 4.1 is added to the 2003 Agreement as follows:

4.1. Right to Purchase Additional Water. The City shall have the further right during the initial term of this Agreement to buy up to an additional 6,000 acre-feet of water from the District based upon the annexation of additional lands within the District to the City of Lodi after the completion and commencement of operation of the City's new Water Treatment Plant, and which as a result of such annexation will be taken out of agricultural production, as follows. For each acre of land so annexed after such date which is now zoned agricultural and which has been irrigated with District water:

- and for which a tentative subdivision map is approved for such acreage for use other than agriculture,
- and which is to be served a water supply by the City of Lodi's utility water system,

the City will be entitled to purchase an additional 3.0 acre-feet of water per such acre from the District, on the same terms and subject to the same conditions herein applicable to the 6,000 acre-feet under this Agreement.

6. Section 7.a. of the 2003 Agreement is amended to read as follows:

a. The District agrees that it will deliver up to 6,000 acre feet per annum to the City under this Agreement except to the extent that the District's Regulated Base Supply of 60,000 acre feet under its Agreements with East Bay Municipal Utility District is reduced in dry years by thirty-five (35) percent. In the event of such a reduction, the District may reduce the amount of water to be provided under this Agreement by up to fifty percent (50%). District shall on or about May 1 of each year make a preliminary estimate of whether the City's deliveries may be curtailed that year, and will provide a final estimate of any curtailment on or about July 1. In such event, the City shall only be obligated to take ~~50%~~ 35% of its estimated delivery before July 1 in that year. There shall be no reduction in the amount of the City's annual payment to the District in such years under paragraph 1.

7. A new Section 7.1 is added to the 2003 Agreement, as follows:

Section 7.1. Lodi acknowledges that District is negotiating with the City of Stockton to sell a base supply of ~~approximately~~ 6,500 of water to the City of Stockton, at a price per acre-foot which is approximately the same price as provided in the District's May 13, 2003 Agreement with Lodi. The delivery of the 6,500 acre-feet of water to Stockton shall be subordinate to Lodi's right to receive its 6,000 acre-feet of water, provided that:

a. Lodi waives and will not exercise, under the last sentence of paragraph 4(c) of the 2003 Agreement. its right of first refusal to purchase the 6,500 acre-feet of water being sold to Stockton; that

b. The delivery of the 6,500 acre-feet of water to Stockton, and Stockton's right to purchase additional water based upon the future annexation of agricultural lands within the District to Stockton, shall take precedence over Lodi's rights to purchase additional water under paragraph 3.b; and

c. Lodi's right to receive banked water under paragraph 8 of the 2003 Agreement will be on a parity with the right of Stockton to receive banked water under Stockton's agreement with Woodbridge, i.e., in the event both Cities want to withdraw more banked water than is available that year, such water will be allocated one-half to each unless they agree on another allocation, as provided in the new subsection c added to paragraph 8.

8. Section 8 is amended as follows:

8. .Carryover of Entitlements. Unused water may not be carried over by the City from year to year except that the right to receive water may be "banked" as follows:

a. If during the ~~first three years in which the water is available to the City under this Agreement~~ period from May 13, 2003 to October 15, 2010, the City does not take the water which is available to the City under this Agreement or takes less than the amounts which are available, then the City may carry over and have credit for such water not taken during that period, not to exceed a total of ~~18,000 acre-feet,~~ 6,000 acre feet per year or a total of 42,000 acre feet, for later delivery during the ~~40-year~~ remaining term of this Agreement, i.e., until October 15, 2047, at such times as the City requests delivery of the water and the District has extra water available as determined solely by the District. There will be no additional charge for the delivery of such banked water.

b. If after ~~said intitial three years,~~ October 15, 2010 , delivery of water to the City is curtailed under paragraph 7.a. by reason of a dry year condition or by District's maintenance or other District activities, then the City may carry over and have credit for the amount of such curtailment for later delivery at such time(s) as the City requests delivery of the water and the District has extra water available as determined solely by the District. Any City credits for curtailed segments of carryover water shall expire at the end of eight (8) years from the end of the period in which the curtailment for that segment of curtailed water occurred. Such credits for delivery of curtailed carryover water within said eight-year period may extend beyond the termination of this Agreement on October 15, 2047. There will be no additional charge for delivery of such banked water.

c. The determination of whether any such banked water or curtailment water is available for delivery shall be made solely by the District. In the event that both

the City and the City of Stockton request such water during the same period(s) that water is available for delivery, the water shall be apportioned between them if necessary in the manner and times that they shall agree upon. In the event they do not agree, such water shall be apportioned between them by the District in the ratio of 50/50 or one-half to Lodi and one-half to Stockton.; provided that, if such apportionment would result in either party losing any deficiency curtailment water banked to the credit of that party because of non-use within the required eight-year period under Section 8.b., that party shall have a first right to such portion of the available water that will avoid such loss.

~~c.~~ d. Except as provided in subparagraph a, no credits shall accrue for water that is available to but is unused by the city.,

9. Section 14 of the 2003 Agreement is amended to read as follows:

14. City Use of District Rights of Way. The District agrees to cooperate with City and to agree to the City's use of any District right of way along the District's Main Canal needed by the City for the conveyance or distribution of water it obtains from the District, provided that such use does not interfere with District's use of its right of way and that District's right of way permits such use by City. The District agrees that City may continue any such use of the right of way established during the term of this Agreement after the term of this Agreement expires.

10. Section 14.a. is added to the 2003 Agreement as follows:

14.a. District Installation of Quality Control Structures on City's Storm Water Discharge Locations. Under the City's October 20, 1993 Storm Drainage Discharge Agreement with the District, City has the right to discharge into District canals, waters collected by the City's storm drainage system (excluding industrial waste and sewage effluent), under the terms and conditions set forth in said Agreement. District shall be entitled at its option to construct or install from time to time at convenient locations on the City's property at or near any of the City's stormwater discharge points into the District's canal system, and to operate and maintain, at the District's cost, filtration/sedimentation structures or other water quality control or improvement devices at said point(s), subject to the City's prior approval of the plans and specifications for such installations, which approval shall not be unreasonably withheld. Nothing herein shall alter City's obligations under said Agreement with respect to the quality of the storm waters and storm drainage into the District's Canals, and all provisions thereof shall continue in full force and effect.

~~10.~~11. All terms and provisions of the 2003 Agreement remain in full force and effect, except as they are expressly amended or modified by this First Amendment to Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this instrument on the 17th day of JANUARY, 2008.

WOODBRIDGE IRRIGATION DISTRICT

Attest:

By _____

_____

CITY OF LODI, A MUNICIPAL CORPORATION

Attest:

_____
Randi Johl, City Clerk

By _____
Joanne Mounce, Mayor

APPROVED AS TO FORM:

_____
Stephen Schwabauer, City Attorney

866109.1

AGREEMENT FOR PURCHASE OF WATER FROM THE WOODBRIDGE IRRIGATION DISTRICT BY THE CITY OF LODI

This Agreement is made and entered into between Woodbridge Irrigation District and the City of Lodi, adjoining entities located within the County of San Joaquin, State of California, this 13th day of May, 2003.

Background Recitals.

a. The City of Lodi obtains its municipal water supply from wells located within the City, extracting the water from the underground aquifer, which is replenished in part by flows of the Mokelumne River. Lodi desires to acquire a supplemental surface water supply to avoid being wholly dependent upon the wells and the possible impacts of eventual overdraft of the groundwater supply.

b. Woodbridge Irrigation District (District or WID) is an irrigation district that is organized and existing under Division 11 of the California Water Code (Sections 20,500 et seq). The District is located immediately west of the City of Lodi and immediately north of the City of Stockton. The District diverts water from the Mokelumne River at Woodbridge Dam, located in the NE 1/4 of the SE 1/4 of Section 34, Township 4 N, Range 6 E, MDBM, for irrigation of a net area of 19,370.3 acres within a gross area of 40,441.77 acres and located within Townships 2 N, 3 N, 4 N and 5 N, Ranges 5 E, 6 E and 7 E, MDBM.

c. The District diverts its water supply from the Mokelumne River under pre-1914 appropriative rights for the diversion of water up to 300 cubic feet per second (cfs). The District's pre-1914 rights are overlapped by the District License No. 5945 for the appropriation of 300 cfs per annum from February 1 to October 31 for irrigation use, supplemented by License No. 8214 for the diversion of an additional 114.4 cfs from May 1 to August 31 of each year and from November 1 of each year to January 31 of the succeeding year. The combined rights under the two Licenses together with the District's pre-1914 rights are limited to a maximum diversion of 414.4 cfs.

d. The District, following the East Bay Municipal Utility District's (EBMUD) building of the Pardee and Camanche Reservoirs on the Upper Mokelumne River, entered into Agreements with EBMUD in 1938 after Pardee's completion and again in 1965 after the completion of Camanche, which acknowledged the priority of some of the District rights to the EBMUD rights, and under which agreements EBMUD releases a Regulated Base Supply of water each year from Camanche Reservoir for diversion by the District at Woodbridge Dam for irrigation use.

e. The District's demand for water from the Mokelumne River under its water rights has begun to diminish by reason of the District's water conservation programs, including the conversion of field furrow and flood irrigation methods of application to water applied by drip irrigation and micro-sprinklers, which reduce the amount of applied water for crops. There has also been a reduction in the delivery of irrigation water by reason of the number of irrigated acres being reduced as a result of urbanization of District lands.

f. By reason of the anticipated reductions in water usage within the District, the District has determined that it will have surplus water in certain amounts available under its water entitlements from the Mokelumne River, and the water that would be delivered to the City by this Agreement is surplus to the current needs of the landowners and water users within the District as required by Section 22259 of the Water Code. The District's South Main Canal traverses the westerly portion of the City of Lodi, and the District could deliver water diverted from the Mokelumne River under its water rights to Lodi at a mutually agreeable location along the District Canal System.

g. The water is diverted by the District at Woodbridge Dam, with diversions being facilitated during the irrigation season by the installation of flashboards in the Dam. The flashboards are removed after the end of the irrigation season for Dam maintenance and Dam safety. When the flashboards are in place, water backs up into Lodi Lake and the City's Lodi Park Lake. The Lake is used for fishing, boating and recreational purposes by inhabitants of the City, and its presence during the summer months is an enhancement to the City's Lodi Park Lake. During the periods that the flashboards are not in the Dam, the Lake level is lowered and its utility for fishing, recreation and boating is reduced.

h. Because of its age, it is necessary for the District to replace the existing Woodbridge Diversion Dam in order to provide greater security and protection against dam failure. In doing so, and in reliance on this Agreement, the District intends, subject to any requirements of the Division of Safety of Dams, that the replacement dam structure will be designed and constructed so that water can be impounded behind the dam year round. The estimated cost for replacement of the Dam and appurtenances is approximately $20,000,000.

i. The City of Lodi desires to contract with the District for the purchase of water from the District for use within the City service area, for which the City will pay on the basis and pursuant to the conditions hereinafter set forth.

NOW, THERFORE, WOODBRIDGE IRRIGATION DISTRICT (DISTRICT) AND THE CITY OF LODI (CITY) AGREE AS FOLLOWS:

May 2003
Jan 1, 2004

1. Water to be Made Available to City, and Payment. Beginning in the calendar year which first follows the entry of a final judgment confirming the validity of this Agreement pursuant to Chapter 9 (commencing with Section 860) of Title 10 of Part 2 of the Code of Civil Procedure, and continuing through the term of this Agreement, the District shall make available to the City out of its Regulated Base Supply under its Agreement with EBMUD, 6,000 acre feet per annum under the terms and conditions herein set forth. In consideration thereof, the City will pay the District annually the sum of ONE MILLION TWO HUNDRED THOUSAND DOLLARS ($1,200,000.) Payments thereon of $300,000 quarterly are due and payable in advance beginning on the first day of each calendar quarter, commencing on the first day of the calendar year which follows said entry of a final judgment confirming the validity of this Agreement. Said payments shall be made irrespective of whether the City takes the water made available to it under this Agreement and irrespective of whether the District has water available for delivery to the City, provided that the District shall make its best efforts to provide to the City the amounts of water provided for in this Agreement.

October 2003 ?

Prior to the commencement of the first full calendar year following the entry of said final judgment, i.e., in the year in which the entry of the final judgment occurs, the City shall make quarterly payments to the District of $300,000 on the first day of each calendar quarter in that year which follows the entry of the final judgment by more than thirty days, in consideration for which one-fourth of 6,000 acre feet of water shall be made available to the City in the that initial year for each calendar quarter for which such payment is made. Any of such water which is not taken by City in that initial year shall be included as a part of the 18,000 acre feet of carryover water which the City may take at a later date as provided for in paragraph 6.a. hereof.

2 Construction of New Dam by Woodbridge. The District has secured the required permits from the Federal and State agencies and the necessary environmental clearances for the construction of a new Woodbridge Dam to replace the existing Dam together with appurtenant facilities, and the District will proceed with construction as soon as is feasible utilizing the revenues to be paid under this Agreement to finance a portion of the costs of the project.

3. Point of Delivery and Time of Delivery. The District agrees to deliver the water to the City at a point or points on the District's Canal at a mutually agreeable location or locations, to be determined at a later date. The water will be delivered during the period from March 1 through October 15. The City shall construct at its sole cost and expense the facilities needed to measure and take delivery of water from the District Canal, and the design, construction and operation thereof shall be approved by the District. The City will be responsible for all costs of operation, repair, maintenance and replacement of such facilities. The measurement facilities shall be recalibrated annually at the City's

expense as requested by the District and the District shall have a continuing right to test the accuracy of such facilities.

a. The City shall provide the District, by January 1 of each year, an estimate of the maximum amount of water anticipated to be needed by the City during each month of that year from March 1 through October 15, which scheduling will be subject to the District's approval. The District will supply such water on said approved monthly schedule pursuant to and as limited by the terms, conditions and limitations of this Agreement; provided that the City shall to the extent that its operations will permit, schedule the taking of as much of its entitlement to water from the District that year prior to July 1 as is feasible, but in any event not less than 3,000 acre feet.

b. At such times as it is possible for the District to deliver water during the remaining months of the year, or to deliver water in excess of 6,000 acre feet during the period from March 1 through October 15, then by mutual agreement of the parties, delivery of such water to the City may be made by the District. The City shall pay the District $100 per acre foot for any such additional water delivered to the City.

c. The water furnished by the District under this Agreement shall be used or furnished by the City only for domestic, municipal, industrial, irrigation and other beneficial uses.

d. The District further agrees that it will, during the term of this Agreement at the City's request, divert from the Mokelumne River at the District's Woodbridge Dam and wheel and convey through the District's canal system to the City's delivery point(s), any non-District water acquired by or available to the City, subject to the District having available capacity for that purpose and subject to the City paying a per-acre-foot charge in an amount which the District determines to be its costs for such service. The District's cost for such service in year 2003 would be $20 per acre-foot.

e. Commencing on January 1 of the seventh year following the year in which execution of this Agreement occurs, the amounts payable to the District under paragraph 1, and the amounts payable to the District under subparagraphs 2.b. and 2.d., shall be increased by two percent per year above the amounts payable during the preceding calendar year. In the event that the annual change in the Consumer Price Index (CPI-W, unadjusted U.S. average) published in December of each year by the United States Bureau of Labor Statistics, commencing in December in the year preceding such seventh year, has increased more than two (2) percent above the December Index of the prior year, the increases in the amounts payable in the ensuing year shall be in the percentage of that increase; provided that any such annual increase shall not exceed five percent (5%).

f. The payments by the City to the District under this Agreement shall be deemed to include the payment during the term of the Agreement of all District groundwater recharge fees on parcels within the City of Lodi which are also located within the boundary of the District.

4. Term of Agreement. (a) This Agreement shall be effective from the date of execution hereof, and shall remain in effect for a term of forty (40) years from said date.

(b) Upon receipt by the District of written notice and request for renewal from the City at least two years in advance of the termination of the Agreement, the District agrees to negotiate with the City for a renewal of this Agreement for an additional forty (40) year term, on terms and conditions that are reasonable and equitable and which are satisfactory to the District.

(c) The District agrees that it will not enter into any agreement during the initial term of this Agreement to provide water to others outside of the District except upon terms which provide that such supply shall be subordinate to the City's rights to be furnished water under this Agreement (except as the City may otherwise specifically agree to). The parties may contract for the delivery of additional amounts of water that may become available upon terms mutually agreeable to the parties. The City shall have a first right of refusal to purchase any water which the District agrees during the initial term of this Agreement to provide to any other purchaser, upon the same terms and conditions provided in such other proposed sale of water.

5. City Payments to be Made from City's Water System Revenues. The City shall make payments under this Agreement solely from the Revenues of, and as an operating expense of, the Lodi Municipal Water System. The City hereby pledges the Revenues to the payments required hereunder. Nothing herein shall be construed as prohibiting the City from using any other funds and revenues for purposes of satisfying any provisions of this Agreement. So long as the City is in compliance with all of its obligations hereunder, such pledge shall not prevent its application of Revenues to other operating expenses of the Lodi Municipal Water System or, subject to the payment of such operating expenses, to other lawful purposes, or impair the rights of any recipient of Revenues lawfully so applied.

"Revenues" means "all gross income and revenue received or receivable by the City from the ownership and operation of the Lodi Municipal Water System, which gross income and revenue shall be calculated in accordance with generally accepted accounting principles, including all rates, fees, and charges received by the City for water service and connection and hook-up fees and all other income and revenue howsoever derived by the City from the ownership and operation of or arising from the Lodi Municipal Water System, but excluding in all cases any proceeds or taxes and any refundable deposits made to establish credit,

federal or state grants, or advances or contributions in aid of construction".

"Lodi Municipal Water System" means "the municipal water system of the City existing on the effective date of this Agreement and all additions, betterments, extensions and improvements thereto hereafter acquired or constructed".

6. City Cooperation in District's Funding of Reconstruction of Woodbridge Dam. The City agrees to cooperate with District in connection with any financing undertaken by District in connection with the reconstruction of the Woodbridge Diversion Dam and to provide to District such certificates, statements and information as District shall reasonably require in connection with such financing, including, without limitation, information relating to the Lodi Municipal Water System and the Revenues, and to provide such information as may be reasonably required in connection with the continuing disclosure undertaking to be entered into by the City pursuant to Rule 15c2-12(b)(5) of the Securities Exchange Commission in connection with the District financing.

7. No Permanent Water Right, and Dry Year Curtailments. The District has determined that the water to be made available annually for delivery to the District pursuant to this Agreement will be surplus to the needs of the District during the term of this Agreement. The parties further agree that no permanent right to the water supplied by the District shall accrue to the City except pursuant to and as limited by the terms of this Agreement.

a. The District agrees that it will deliver up to 6,000 acre feet per annum to the City under this Agreement except to the extent that the District's Regulated Base Supply of 60,000 acre feet under its Agreements with East Bay Municipal Utility District is reduced in dry years by thirty-five (35) percent. In the event of such a reduction, the District may reduce the amount of water to be provided under this Agreement by up to fifty percent (50%). District shall on or about May 1 of each year make a preliminary estimate of whether the City's deliveries may be curtailed that year, and will provide a final estimate of any curtailment on or about July 1. In such event, the City shall only be obligated to take 50% of its estimated delivery before July 1 in that year. There shall be no reduction in the amount of the City's annual payment to the District in such years under paragraph 1.

b. Except for noncompliance with the foregoing provisions of this paragraph, the City shall have no claim for damages or breach arising from the unavailability of surplus water from the District for any cause or condition.

8. Carryover of Entitlements. Unused water may not be carried over by the City

from year to year except that the right to receive water may be "banked," as follows:

a. If during the first three years in which the water is available to the City under this Agreement, the City does not take the water or takes less than the amounts which are available, then the City may carry over and have credit for the water not taken, not to exceed a total of 18,000 acre feet, for later delivery during the initial 40-year term of this Agreement, at such times as the District has extra water available as determined solely by the District. There will be no additional charge for the delivery of such banked water.

b. If after said initial three years delivery of water to the City is curtailed under paragraph 7.a. by reason of a dry year condition or by District's maintenance or other District activities, then the City may carry over and have credit for the amount of such curtailment for later delivery at such time(s) as the District has extra water available as determined by the District. Any City credits for curtailed segments of carryover water shall expire at the end of eight (8) years from the end of the period in which the curtailment for that segment of curtailed water occurred. Such credits for the delivery of curtailed carryover water within said eight-year period may extend beyond the termination of this Agreement. There will be no additional charge for the delivery of such banked water.

c. Except as provided in subparagraph a, no credits shall accrue for water that is available to but is unused by the City.

9. Water Quality, Temporary Interruptions, and Responsibility for the Water Beyond Point of Delivery.

a. The water being supplied to the City is raw water diverted from the Mokelumne River, and the character or quality of the water furnished hereunder may vary from time to time. District does not guarantee in any respect the character or quality of the water furnished pursuant to this Agreement, provided that the District shall not apply or use any chemicals within the Canal section used to deliver water to the City that the City determines to be deleterious to the quality of the water for the uses made by the City of such water.

b. It is agreed that there may be, in addition to shortages of water, temporary discontinuance or reduction of water to be furnished for the City as herein provided, for purposes of investigation, inspection, maintenance, repair or replacement as may be necessary of any of the facilities used by the District for furnishing water to the City. The District agrees to provide the City notice of such temporary discontinuance or reduction of water as soon as such information is available to the District.

c. The City shall hold the District harmless from and defend the District from all claims or expenses on account of damage or claim of damage of any nature whatsoever from which there is legal responsibility, including property damage, personal injury or death, arising out of or connected with the delivery, control, carriage, handling, use, or disposal or distribution of water furnished hereunder beyond the point of delivery of water into the City's system from the District's Canal.

10. Right of Termination for Unacceptable Conditions in Validation Judgment. In the event that the court in the validation action enters a judgment validating the Agreement but upon conditions or restrictions which impose upon either party costs, requirements, obligations, or limitations in their performance of the agreement or upon their operations or property interests which in that party's judgment are unacceptable or otherwise not in the best interests of that party, that party shall have the right to terminate this Agreement, and in that event neither party shall have any further liability or obligation to the other party hereunder.

11. Arrearage in Payments. No water shall be furnished to the City during any period in which the City may be in arrears in payment of charges accruing hereunder after the determination on the amount thereof as above provided. Interest on arrearage in payment shall be charged at a rate of 1-1/2% per month and compounded monthly, commencing 45 days after the due date of the payment.

12. Assignment. The provisions of this contract shall apply to and bind the successors and assigns of the respective parties hereto; but no assignment or transfer of this contract or any part thereof or interest therein by the City shall be valid unless and until approved in writing by the District; and no assignment of the obligation to provide or deliver the water shall be assignable by the District without the consent of the City.

13. Fees and Costs. Any fees, costs or expenses, including attorney fees, administrative costs, and consultant fees, incurred by the District to effect the sale of water to the City, together with CEQA and any other regulatory approval, shall be paid by District and City on a 50/50 basis. The City shall not be required to contribute to any fees or costs incurred by District relating to other issues or disputes that may arise in any of said proceedings not directly relating to City's use of District water. District shall provide to City invoices and accountings of said fees and expenses on a regular basis.

14. City Use of District Rights of Way. The District agrees to cooperate with City and to agree to the City's use of any District right of way along the District's Main Canal needed by the City for the conveyance or distribution of water it obtains from the District.

15. CEQA. The parties agree that the District will be Lead Agency for purposes of

compliance with any requirements of the California Environmental Quality Act pertaining to the execution of this Agreement by each party.

16. Entire Agreement. This Agreement contains the full and entire Agreement of the parties and there are no other conditions, either explicit or implied, nor any warranties or promises other than those contained within the written terms of this Agreement.

17. Time of the Essence. Time is of the essence in the performance of this Agreement.

18. Nonwaiver. The failure of either party to enforce or abide by a term or condition of this Agreement shall not constitute a waiver of that term or condition unless a written Agreement is prepared specifically providing for the waiver or forgiveness of that term and such Agreement is executed by each party hereto.

19. Date of Execution. The date of execution of this Agreement is the date of execution by the party last signing the Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this instrument on the 13th day of May, 2003.

WOODBRIDGE IRRIGATION DISTRICT

By _____

Attest: _____

CITY OF LODI, A MUNICIPAL CORPORATION

By _____
Susan Hitchcock, Mayor

Attest: _____
Susan J. Blackston, City Clerk

APPROVED AS TO FORM: _____
Randall A. Hays, City Attorney

4/16/03

Appendix G - GBA Groundwater Management Plan

The Eastern San Joaquin Groundwater Basin Groundwater Management Plan, prepared by the Northeastern San Joaquin County Groundwater Banking Authority, is included in the CD located on the back cover of this report.

Appendix H - Water Balance Calculation for Estimated Safe Yield

Treadwell&Rollo

13 January 2006
Project 3923.17

Mr. Charles Swimley
Department of Public Works
City of Lodi
221 West Pine Street
Lodi, California 95240

Subject: Evaluation of Safe Yield
City of Lodi

Dear Mr. Swimley:

As part of our ongoing work, Treadwell & Rollo, Inc. evaluated the potential safe yield of the aquifers used by the City of Lodi (Figure 1). Safe yield is defined as that amount of groundwater that the City of Lodi may extract without a further decline in groundwater elevations. The estimate of safe yield will be used in the City's urban water management plan, which is currently being revised.

CONCEPTUAL MODEL

The City of Lodi lies in the San Joaquin County groundwater basin (Basin) adjacent to the Mokelumne River (Figure 1). Recharge to the Basin occurs from surface water recharge, stream recharge principally from the Mokelumne River, and lateral groundwater flow. Prior to development in the county, groundwater flowed from east to west as shown on Figure 1 (USGS, 1989, *Regional Aquifer-System Analysis – Groundwater Flow in the Central Valley, California,* Professional Paper 1401D). Groundwater has been pumped from the Basin throughout the 1900s for agriculture and municipal/commercial uses. The pumping has resulted in a wide decrease of the groundwater elevations; the deepest portion of these decreases occurs south and east of the Lodi (Figure 1).

Camp Dresser McKee prepared a groundwater-surface water model as part of the *San Joaquin Water Management Plan* dated October 2001. As part of the model, CDM estimated the amount of water that enters and leaves the Basin. The difference between the inflow and outflow is overdraft or mined aquifer storage. The amount of overdraft for the Basin was estimated to be 107,228 acre-feet per year (ac-ft/yr) as shown in the table below. The annual balance of water in and out of the Basin for current conditions was estimated to be the following:

Treadwell & Rollo, Inc. *Environmental & Geotechnical Consultants*
555 Montgomery Street, Suite 1300, San Francisco, CA 94111
Telephone (415) 955-9040 Facsimile (415) 955-9041

	In *ac-ft/yr*	Out *ac-ft/yr*	Balance *ac-ft/yr*	Notes
Surface	608,400		608,400	Net recharge from rainfall and other
Streams	198,170	-108,898	89,272	Stream recharge and discharge
Groundwater Flow	98,000	-35,300	62,700	Subsurface groundwater flow
Pumping		-867,600	-867,600	Lodi's pumping 17,000 ac-ft/yr
TOTALS	904,570	-1,011,798		
			-107,228	Mined aquifer storage

References: Table 3-3, Simplified Groundwater Balance for Current Conditions, CDM October 2001, *San Joaquin County Water Management Plan – Phase 1 Planning, Analysis and Strategy*, v. 2; City of Lodi, 2005 pumping records. (Saline intrusion from Stockton area lateral inflow was estimated to be 42,000 ac-ft/yr but was not included in overdraft calculations due to its local effect.)

APPROACH AND CALCULATIONS

Based on discussions with the City, Treadwell & Rollo used two approaches to estimate Lodi's potential portion of the overdraft and safe yield in the Basin. One approach was based on the proportion of mined aquifer storage relative to total inflow into the Basin. The other approach was based on the difference between pre-development and current water elevations.

In the first approach, Treadwell & Rollo estimated that the safe yield will be Lodi's current usage minus its portion of the Basin overdraft. This assumes that Lodi's overdraft is the same as the average overdraft for the Basin. To estimate the portion of Basin overdraft, Treadwell & Rollo calculated the volume of mined aquifer storage divided by the net inflow (or water available to replenish the Basin). This ratio is the following:

= Mined aquifer storage/(net recharge from rainfall and other + net stream recharge + net subsurface groundwater flow)

Using the estimates in the table above, this overdraft portion would be the following:

= 107,228 / (608,400 + 89,272 + 62,700) or 14%

Since Lodi uses 17,000 ac-ft/yr, then Lodi's portion would 14% of 17,000 or 2,400 ac-ft/yr. So, Lodi's safe yield amount would be 17,000 – 2,400 or 14,600 ac-ft/yr.

In the second approach, Treadwell & Rollo again estimated that the safe yield would be Lodi's current use minus Lodi's portion of Basin overdraft. Lodi's portion of the overdraft was estimated to be the volume defined by the difference between predevelopment and current water elevations within the City limits (V_{Lodi}), divided by the volume between pre-development and current water elevations for the entire Basin (V_{Total}).

In this approach, the pre-development water elevations represent base-line conditions, and current water elevations represent overdraft. The difference between the two surfaces represents the volume of overdraft or mined aquifer storage. This approach is portrayed conceptually in Figure 2, where the four cross sections are displayed in a block diagram. The vertical dimensions of the block diagram are shown on Figure 2, where the average height of the overdraft block for the Basin is 55 feet, and the average height of the overdraft block for the City is 40 feet.

The area of the City of Lodi is 6,466 acres or approximately 10.1 square miles according to City records. So using these dimensions, $V_{Lodi} = 1.1 \times 10^{10}$ ft^3. The area of the Basin is approximately 20 miles (105,600 feet) wide and 33 miles (174,240 feet) long. So $V_{Total} = 1 \times 10^{12}$ ft^3, and $V_{Lodi} / V_{Total} =$ 1.1%. Lodi's portion of overdraft is then, 107,228 x 0.011 = 1,200 ac-ft/ yr, and Lodi's safe yield would be 17,000 – 1,200 = 15,800 ac-ft/yr.

DISCUSSION

Based on these two approaches, the City of Lodi safe yield could range from approximately 14,600 to 15,800 ac-ft/yr. These results are sensitive to calculation assumptions such as the area of the City of Lodi or estimates of mined aquifer storage and should be considered preliminary in recognition of these limitations.

The concept of safe yield is subject to considerable interpretation. This is based on the challenge of accounting for the significant water uses such as streams, springs, wetlands, and groundwater-dependent ecosystems and providing estimates of the actual amounts needed for each use.

Treadwell & Rollo appreciates the opportunity to provide continued services to the City of Lodi. If you have questions regarding this safe yield estimate, please call either of us.

Sincerely,
TREADWELL & ROLLO, INC.

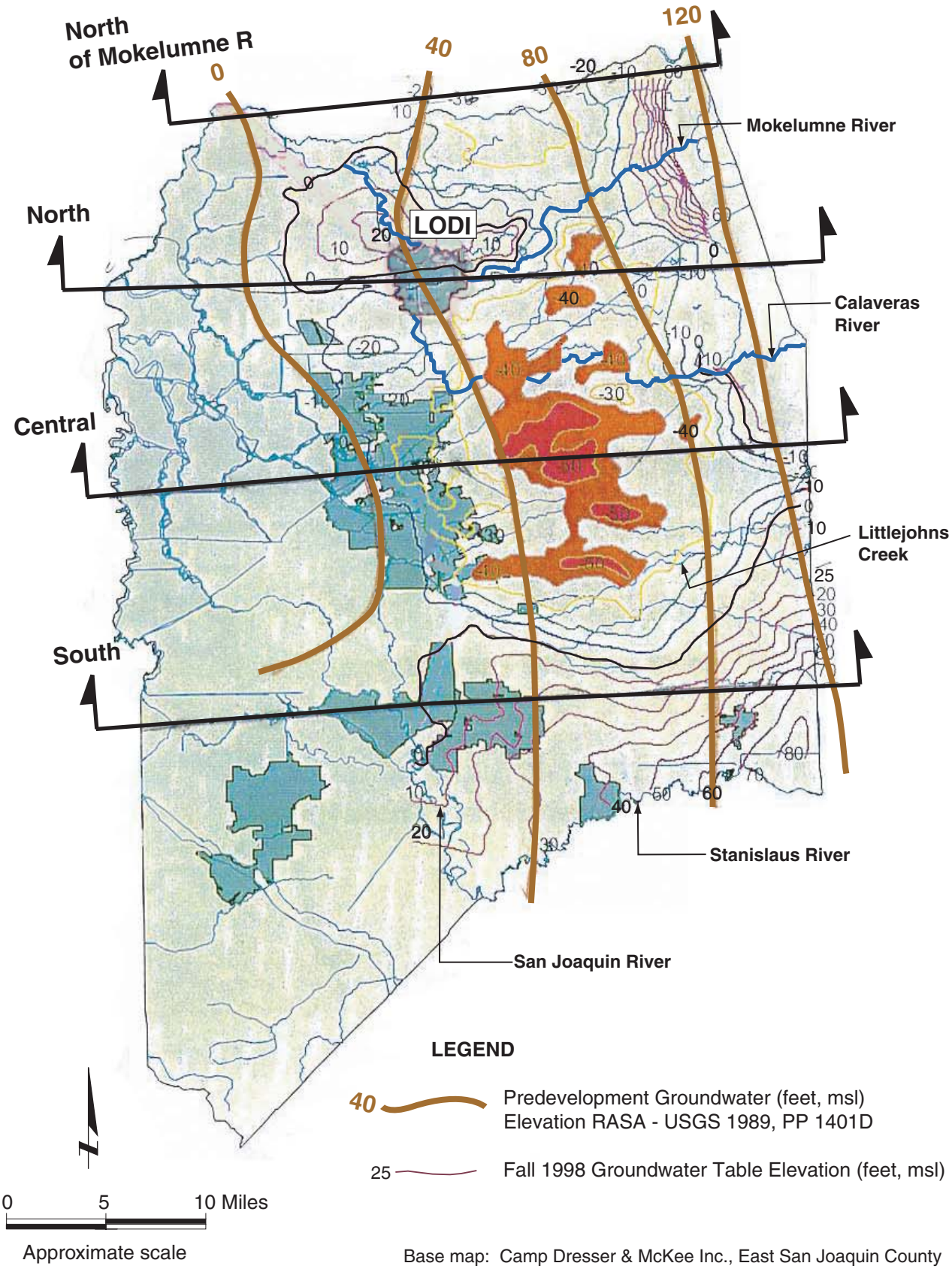
Philip G. Smith, CPGS
Vice President

Patrick B. Hubbard, PG
Senior Associate Geologist

39231702.PBH

Attachments: Figure 1 – Groundwater Contours and Cross Sections
Figure 2 – Cross Sections and Conceptual Block Diagram

FIGURES



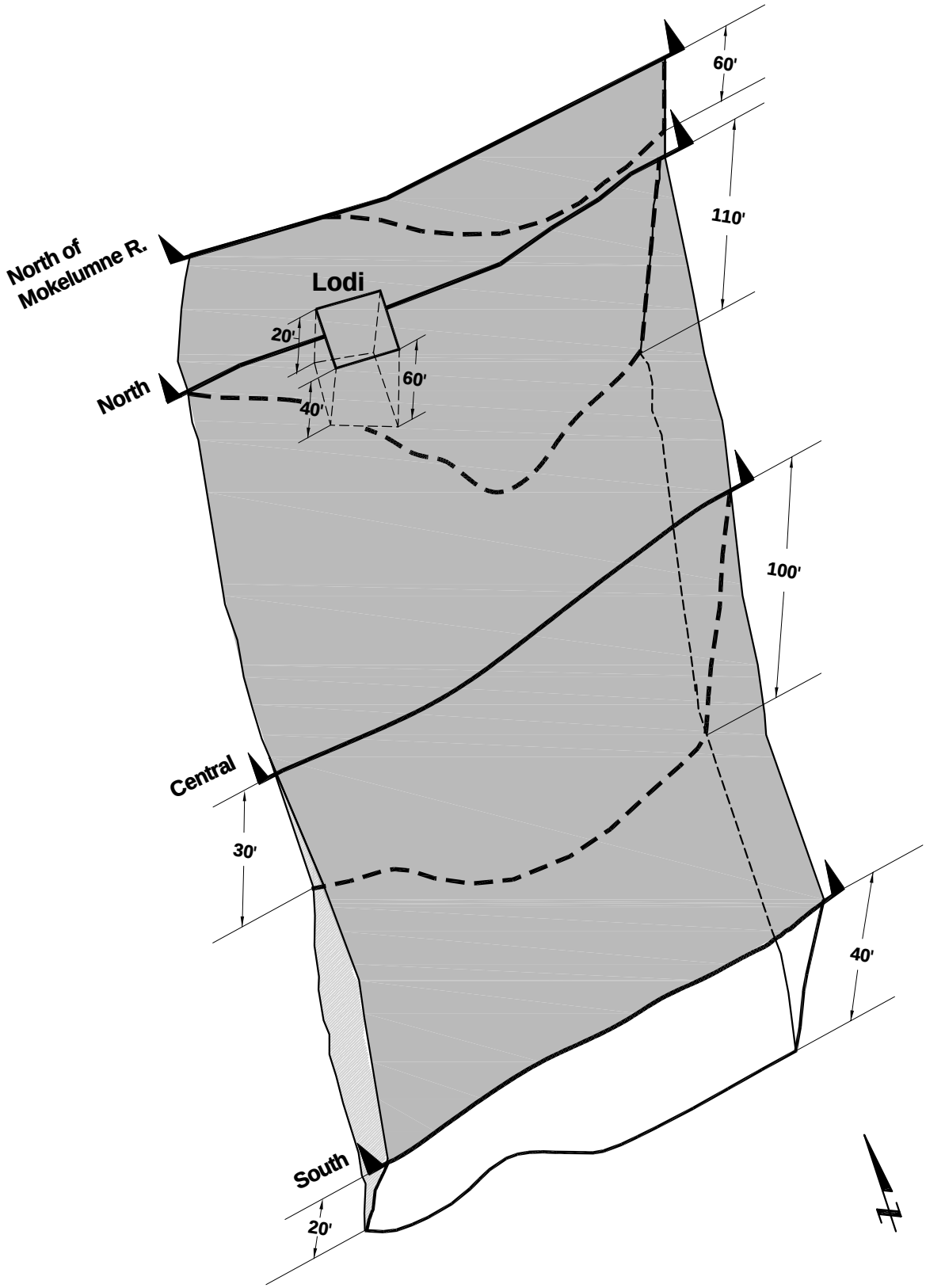
Base map: Camp Dresser & McKee Inc., East San Joaquin County Groundwater Depression and Extent of Saline Intrusion, undated.

LODI SAFE YIELD ESTIMATE
Lodi, California

GROUNDWATER CONTOURS AND CROSS SECTIONS

Treadwell&Rollo

Date 01/19/06	Project No. 3923.17	Figure 1



References: USGS, 1989, PP 1401D; CDM, 2001

LODI SAFE YIELD ESTIMATE
Lodi, California

CROSS SECTIONS AND CONCEPTUAL BLOCK DIAGRAM

Treadwell&Rollo

Date 01/04/06	Project No. 3923.17	Figure 2

3923.17 Cross Section.dwg

Appendix I - City of Lodi Recycled Water Master Plan

The City of Lodi Recycled Water Master Plan is included in the CD on the back cover of this report.

Appendix J - Emergency Response Plan

CITY OF LODI

PUBLIC WORKS DEPARTMENT

WATER SYSTEMS DIVISION

E M E R G E N C Y

R E S P O N S E

P L A N

Set No. ____

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PURPOSE

The mission of the City of Lodi Water Systems Division is to provide:

- Public Safety
- Water at appropriate quantities and pressures
- Water that meets Federal, State and Local drinking water standards
- Public confidence that the above criteria are met consistently and reliably, currently and in the future

During an emergency, the City of Lodi Water Systems Division must insure that our mission is met and/or restored as quickly as possible following Standardized Emergency Management System (SEMS) Guidelines.

This Emergency Response Plan (ERP) describes the emergency response procedures, available resources, and primary emergency task assignments for the Water Systems Division should an emergency occur. The emergencies addressed in this document include; flood, fire, terrorist threat, civil disturbance, malicious mischief, severe weather, earthquake, and nuclear accident. This ERP is unique to the Water Systems Division, and is intended to be used in both accordance and in conjunction with the existing City of Lodi Emergency Plan (December 1999) This ERP has been designed and organized in accordance with the statewide SEMS. As required, emergency actions taken pursuant to this plan will be conducted using the principles of SEMS, of the California Office of Emergency Services (California Government Code, Section 8607).

This plan is also intended to be used with the Water Systems Division Emergency Call-Out Directory (Attachment A) and the Federal, State, and Local Agency Assistance Directory (Attachment B) as a guide for directing division responses to emergencies.

RESPONSIBILITIES

Public Works Director (PWD)

The PWD is responsible for the management of all field actions which directly apply to returning the Water Systems Utilities to normal operation. The PWD activates various elements of the action plan and coordinates its execution. The PWD directs subordinate unit operational plans, requests and releases resources, makes expedient alterations to the action plan as required, and reports to the City Emergency Operations Center (EOC).

A. Obtain briefing from the EOC
B. Develop Water Systems Action Plan
C. Brief and assign Water Systems personnel according to the plan
D. Supervise Water Systems emergency operations
E. Determine need and request additional resources
F. Initiate recommendations for release of resources
G. Assemble and disassemble Water Systems crews
H. Report information about special activities, events, and occurrences to the EOC

At the direction of the City Manager, the Water/Wastewater Superintendent and/or Assistant Water/Wastewater Superintendent may take on all, part or alternate these duties with the Public Works Director in his absence.

Water/Wastewater Superintendent - Assistant Water/Wastewater Superintendent (AWWS)

The AWWS is responsible for assisting the PWD in the management of all field actions which directly apply to returning the operations of Water Systems Utilities to normal. The AWWS activates various elements of the action plan as directed by the PWD and coordinates its execution. The AWWS assists the PWD in developing and directing subordinate unit operational plans, requests and releases resources, assists in making expedient alterations to the action plan as required, and helps reporting such to the EOC.

A. Obtain briefing from the EOC
B. Develop Water Systems Action Plan
C. Brief and assign Water Systems personnel according to the action plan
D. Supervise Water Systems emergency operations
E. Determine need and request additional resources
F. Initiate recommendations for release of resources
G. Assemble and disassemble Water Systems crews
H. Report information about special activities, events, and occurrences to the EOC

The Water/Wastewater Supervisors may assume any responsibilities of the Water/Wastewater Superintendent - Assistant Water/Wastewater Superintendent in his absence.

Water/Wastewater Supervisors (WWS)

The Supervisors report to the PWD or the AWWS and are the top level of field operations. They are responsible for the implementation of the assigned portion of the action plan, assignment of manpower and other resources within their section, and reporting on progress of field operations and status of resources within their section.

A. Implement Action Plan
B. Provide action plan to subordinate employees
C. Identify critical elements assigned to section
D. Review section requirements with subordinates and assign tasks
E. Coordinate activities within adjacent sections
F. Determine need for assistance on assigned tasks
G. Submit situation and resource status information to PWD or AWWS
H. Resolve logistic problems within section
I. Suggest needed changes in the action plan to superiors

Water Systems Employees

The employees are responsible for performing assigned tasks as required. They also report work in progress, resource status, and other important information to the WWS.

A. Implement assigned tasks
B. Review assignments and tasks with subordinates
C. Monitor work progress and suggest changes to superiors
D. Coordinate activities with adjacent employees
E. Submit situation and resource status information to WWS

The remainder of other City personnel may be assigned WWS or Water System Employee tasks as designated at the time of the incident by the PWD and/or AWWS.

REPORTING LOCATIONS

PWD and AWWS report to the Emergency Operations Center (EOC) established by the City Manager.

All crewmembers report to control points, unless directed otherwise:

Water

Primary:	Municipal Service Center 1331 South Ham Lane
Secondary:	City Hall 221 West Pine Street

In the event of major flooding due to a dike or dam break, the above control points may be inaccessible and alternate locations will be established.

EMERGENCY CALL LIST

Refer to City of Lodi Water Systems Division Emergency Call Out Directory (Attachment A) and the Federal, State, and Local Agency Assistance Directory (Attachment B) as a guide for directing division responses to emergencies. The employees on the Call Out Directory are contacted by the City's Utility Control Center.

Appendix K - City's Water Conservation Ordinance

PUBLIC WORKS DEPARTMENT
WATER CONSERVATION OFFICE
(209) 333-6829

INFORMATION SHEET

Requirements of the City of Lodi Water Conservation Ordinance

****

Ordinance Requirements - Water waste includes but is not limited to:

1. Allowing a controllable leak of water to go unrepaired.
2. Watering lawns, flower beds, landscaping, ornamental plants or gardens except on watering days as follows: **Odd**-numbered addresses on Wednesday, Friday and Sunday; **Even**-numbered addresses on Tuesday, Thursday, and Saturday. (WATERING IS NOT ALLOWED ON MONDAYS)
3. Watering lawns, flower beds, landscaping, ornamental plants and gardens between **10 a.m. and 6 p.m. from May 1 through September 30** each year. (WATERING BETWEEN THOSE HOURS IS NOT ALLOWED)
4. Washing down sidewalks, driveways, parking areas, tennis courts, patios, other paved areas or buildings.
5. Washing any motor vehicle, trailer, boat, moveable equipment except with a bucket. A hose shall be used for rinsing only and for not more than three (3) minutes.
6. Use of a hose without a positive shut off nozzle. (NO OPEN HOSES)
7. Allowing excess water to flow into a gutter or any drainage area for longer than three (3) minutes.
8. Overwatering lawns/landscapes, specially from November 1 through February 28, or during and immediately after a rain.

****

Water Wasting Rates and Enforcement - Education and cooperation is our first goal, but the following enforcement procedures and charges will be followed for water wasting.

-1st Water Waste - City will leave an information sheet describing the waste so that it may be corrected.

-2nd Water Waste*- City will give written notice requiring corrective action. * Within 12 months of a 1st Water Waste

-3rd Water Waste*- City will give written notice, and a $35 charge will be added to the next utility bill. * Within 12 months of a 2nd Water Waste

-4th Water Waste*- City will give written notice, and a $75 charge will be added to the next utility bill. * Within 12 months of a 3rd Water Waste

-5th and Subsequent Water Wastes*- City will give written notice, and a $150 charge will be added to the next utility bill **AND** the City may require a water meter and/or flow restrictor to be installed at the waster's expense.
* Within 12 months of the previous Water Waste

****

Water saving tips and other Water Conservation Program information:

1. **Before washing down paved areas for public health or safety** (see #4 above) or for any special circumstances **call** the Water Conservation Office at 333-6829 for prior approval.
2. If you need **extra watering due to fertilizer application or for new turf/seeding**, please **first notify the Water Conservation Office** at 333-6829.
3. For lawns with a run-off problem, apply water for a short period of time and then allow enough time for it to soak in before turning the water back on, for example; 5 minutes on, 20 minutes off, 5 minutes on. This will increase the amount of water being absorbed and decrease the amount of water running into the gutter. Consult landscapers/gardeners/nurseries for improving your lawns water absorbing capacity and for other ideas.
4. During and following rain it is not necessary to water lawns and landscaping, and normally from November 1 through February 28, one watering per week or less is more than enough.
5. Regularly replace your back-up batteries in your automatic sprinkler controls to prevent excess watering due to power failures or interruptions.

****

If you have any questions, need to discuss any violations, would like further information concerning water conservation, or to report water waste, please call the Water Conservation Office at 333-6829.

This is Not a Citation. However, if you have received any previous notice within the last 12 months, a written notice may follow.

See reverse for full Water Conservation Ordinance.

Revised 3/00

DEPARTAMENTO DE OBRAS PÚBLICASDE
OFICINA DE CONSERVACIÓN DE AGUA OFIC
(209) 333-6829

HOJA DE INFORMACIÓNDE

Requisitos del Reglamento de Conservación del Agua de la Ciudad de Lodi

****

REQUISITOS DEL REGLAMENTO DE CONSERVACIÓN DEL AGUA - EL DESPERDICIO DEL AGUA INCLUYE PERO NO ESTÁ LIMITADO A LO SIGUIENTE:

1. El permitir que una gotera de agua que puede ser controlada siga sin ser reparada.

2. El regar céspedes, jardines y plantas de ornamentación excepto en los días designados por la Ciudad. Domicilios que terminan en números nones: Miércoles, Viernes y Domingos. Domicilios que terminan en números pares: Martes, Jueves y Sábados.
   (NO ES PERMITIDO REGAR LOS LUNES)

3. El regar céspedes, jardínes, y plantas de ornamentación entre las horas de las 10 de la mañana a las 6 de la tarde a partir del 1ro de Mayo hasta el 30 de Septiembre de cada año. **(REGAR ENTRE ESAS HORAS NO ES PERMITIDO)**

4. El lavar aceras, áreas de estacionamiento, canchas de tenis, edificios, entradas residenciales, patios y otras áreas pavimentadas.

5. El lavar vehículos de motor, equipo movible, lanchas y remolques excepto con un balde. Se debe usar una manguera solamente para enjuagar y no por más de tres (3) minutos.

6. EL usar una manguera sin un boquerel positivo de cortar el agua.

7. El dejar que el exceso de agua siga corriendo a la cuneta o a una área de drenaje por más de tres (3) minutos.

8. El regar demasiado los céspedes, jardines y plantas de ornamentación a partir del 1ro de Noviembre al 28 de Febrero, durante y después de llover.

****

EJECUCIÓN Y RECARGOS POR EL DESPERDICIO DEL AGUA - La educación y cooperación es nuestra primera meta. Las siguientes formas de ejecución y recargos serán aplicados por el desperdicio del agua:

Primer desperdicio de agua - La Ciudad le dará una hoja de información describiendo el desperdicio del agua para que este corregido.

Segundo desperdicio de agua* - La Ciudad le enviará una nota requiriendo acción correctiva.

Tercer desperdicio de agua* - La Ciudad le enviará una nota y un recargo de $35.00 será agregado a la siguiente cuenta de utilidades.

Cuarto desperdicio de agua* - La Ciudad le enviará una nota y un recargo de $75.00 será agregado a la siguiente cuenta de utilidades.

Quinto y subsiguientes desperdicios de agua* - La Ciudad le enviará una nota y un recargo de $150.00 será agregado a la siguiente cuenta de utilidades. La Ciudad podrá requerir un contador y una llave para controlar el flujo de agua, que será pagado por el usuario. (*Dentro de los mismos 12 meses).

****

RECOMENDACIONES PARA EL USO EFICIENTE DE AGUA:

1. Antes de lavar áreas pavimentadas por razones de salud o segurida pública (vea #4 arriba) o por alguna razón especial, llamar a la Oficina de Conservación del Agua al 339-9026 para autorizacion.

2. Los céspedes con problemas de drenaje, deben ser regados por un período corto, y esperar que el agua se consuma antes de volver a regar por ejemplo: regar por 5 minutes, no regar por 20 minutes; regar por 5 minutos, no regar por 20 minutes. Regando de esta manera el cesped absorvera más y se disminuirá la desperdicio del agua.

3. Durante y después de llover no es necesario regar los céspedes. A partir del 1ro de Noviembre hasta el 28 de Febrero solamente regar una vez por semana.

****

SI UD TIENE ALGUNA PREGUNTA, NECESITA HABLAR CON ALGUNA PERSONA ACERCA DE UNA INFRACCIÓN, SI NECESITA MAS INFORMACIÓN ACERCA DE LA CONSERVACIÓN DEL AGUA, O NECESITA INFORMARSE ACERCA DEL DESPERDICIO DEL AGUA, POR FAVOR LLAMAR A LA OFICINA DE CONSERVACIÓN DEL AGUA AL TELEFONO 333-6829.

ESTO NO ES UNA CITACIÓN. PERO SI UD HA RECIBIDO ALGUN OTRO AVISO DENTRO DE LOS ÚLTIMOS 12 MESES, UN AVISO POR ESCRITO LE SERÁ ENVIADO.

(Revised 8/99)

REGLAMENTO PARA CONSERVACIÓN DE AGUA
CÓDIGO MUNICIPAL DE LA CIUDAD DE LODI, CAPÍTULO 13.08, ARTÍCULO III

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DESPERDICIO (MALGASTO). (Sección 13.08.220)
El desperdicio de agua es prohibido y cualquier desperdicio pondrá a la persona bajo las condiciónes de este artículo.

DEFINICIÓN. (Sección 13.08.230)

"El desperdicio de agua" incluye, pero no está limitado a lo siguiente:

A. El no reparar una gotera de agua que puede ser controlada;

B. El regar céspedes, jardines, plantas de ornamentación, los días y horas fuera de las permitidas en la Sección 13.08.240 de este artículo.

C. El lavar aceras, áreas de estacionamiento, canchas de tenis, calles, edicifios, entradas residenciales y otras áreas pavimentadas, excepto cuando sea necesario lavar un derrame de alguna substancia que pueda ser peligrosa para la salud y la seguridad pública.

D. El lavar vehículos, remolques o equipo movible a no ser con un balde y enjuagar el vehículo o equipo, usando una manguera no por más de tres minutos.

E. El usar una manguera sin un boquerel positivo para cortar agua.

F. El regar demasiado una área haciendo que el agua corra a una cuneta o área de drenaje por más de tres minutos.

G. El dejar correr el agua sin necesidad en un domicilio, establecimiento comercial o industrial, en el pavimento, desagues o áreas de drenaje, con algún equipo o de cualquier otro modo por más de tres minutos.

H. El regar demasiado los céspedes, jardines y plantas de ornamentacion a partir del 1º de Noviembre al 28 de Febrero, durante y después de llover.

DÍAS Y HORAS DE RIEGO. (Sección 13.08.240)
A. Días. El riego de céspedes, jardines y plantas de ornamentación durante el año será permitido como sigue:
1. Propiedades que terminan en números nones (1,3,5,7,9): Miércoles, Viernes y Domingos.
2. Propiedades que terminan en números pares (2,4,6,8,0): Martes, Jueves y Sábados.

B. Horas. El riego de céspedes, jardines y plantas de ornamentación se permite a cualquier hora, excepto a partir del 1º de Mayo hasta el 30 de Septiembre entre las horas de las 10 de la mañana a las 6 de la tarde.

PROCEDIMIENTOS PARA LA EJECUCIÓN. (Sección 13.08.250)
A. Cuando la Ciudad se entere del primer desperdicio de agua, la Municipalidad le dará una hoja con información que contiene en detalle el Articulo III, en el cual se le dará a conocer el tipo de desperdicio ocurrido para que éste sea corregido, remediado o disminuido inmediatamente o dentro de un período especificado, que la Ciudad crea conveniente. La hoja de información también puede ser entregada a cualquier otra persona conocida por la Ciudad que sea responsable por el desperdicio del agua, o también puede ser enviada por correo al domicilio donde tuvo lugar el desperdicio. En caso de que continuen los desperdicios de agua, nuevas notificacions serán enviadas al mismo domicilio.

B. En el caso de un segundo desperdicio de agua durante los mismos 12 meses, la Municipalidad enviará a la persona que regularmente recibe la cuenta de utilidades una nota enumerando fechas y tipos de desperdicios ocurridos.

C. En el caso de un tercer desperdicio de agua dentro de los mismos 12 meses, otra nota será eviada por correo notificándole de un recargo de $35.00 dólares que serán agregados a la cuenta de utilidades del siguiente mes.

D. En el caso de un cuarto desperdicio de agua dentro de los mismos 12 meses, otra nota será enviada por correo notificándole nuevamente de un recargo de $75.00 dólares que serán agregados a la cuenta de utilidades del siguiente mes.

E. En el caso de un quinto o más desperdicios de agua dentro de los mismos 12 meses, otra nota será enviada notificándole de un recargo de $150.00 dólares que serán agregados a la cuenta de utilidades del siguiente mes. La Ciudad también puede requerir que el dueño o el usuario pague el costo de instalar un contador como pre-requesito para continuar el servicio de agua. La Ciudad también podrá instalar una llave para regular el flujo del agua y requerir que el dueño o el usuario pague el costo de instalar o de remover el contador o la llave .

APLICACIÓN ESTRICTA. (Sección 13.08.260)
Si el Director de Obras Públicas o un representante designado determina que la aplicación estricta del artículo III, pueda causar daños a la salud y la seguridad pública, u otra condición especial exista, la aplicación estricta puede ser suspendida temporalmente. Las circunstancias especiales incluirán: pero estarán limitadas a áreas recién sembradas, a lavar después de encementar y de lavar a presión un edificio antes de ser pintado. La decisión del Director de Obras Públicas puede ser apelada al Concilio de la Ciudad como se describe en la sección 13.08.265 de este artículo.

APELACIÓNES. (Sección 13.08.270)
Si la decisión hecha por el Director de Obras Públicas no es satisfactoria a la persona que apelo por la reconsideración, esta persona tiene veinte (20) días después de ser notificado de la decisión del Director, para apelar por escrito al Concilio de la Ciudad. La apelación será revisada por el Concilio dentro de veinte (20) días después la la fecha de registro. El Concilio hará la decisión final de la apelación dentro de veinte (20) días después de la revisión. La acción, decisión o determinación del Director de Obras Públicas, permanecerá en efecto durante el período de reconsideración. Los recargos acumulados serán suspendidos temporalmente hasta que el Concilio de la Ciudad haga su decisión final.

VIOLACIÓN - INFRACCIÓN. (Sección 13.08.280)
Además de los procedimientos para la ejecución y recargos dados a conocer en este artículo, cualquier persona que desperdicie agua, como se define en este artículo, puede también ser acusada de una infracción.

PROPÓSITO DE EMERGENCIA PARA LA CONSERVACIÓN DEL AGUA. (Sección 13.08.290)
El propósito, de emergencia para la conservación del agua es ayudar a mantener la presión del agua y suplir demandas. Cuando el sistema de agua no puede o no es adecuado esto puede causar daños al sistema de agua y poner en peligro la salud y seguridad del público. El Director de Obras Públicas o un representante designado determinará el grado de emergencia y designará cuales restricciónes adicionales serán necesarias para el uso del agua y que acciónes apropiadas deberán ser tomadas para proteger el sistema del agua y a los habitantes de Lodi.

Notice of Violation of Lodi Municipal Code Section 13.8 Article III – Water Conservation

Issued to:

Copy to:

Location of Violation:

LODI, CALIFORNIA

First Water Waste – Information Sheet left at location of violation.

_____ *Second Water Waste*[a] *First mailed notice (warning) requiring corrective action.*
(a) Within 12 months of a first waste of water.

_____ *Third Water Waste*[b] *A $35 charge to be added to next utility bill.*
(b) Within 12 months of a second waste of water.

_____ *Fourth Water Waste*[c] *A $75 charge will be added to next utility bill.*
(c) Within 12 months of a third waste of water.

_____ *Fifth Water Waste*[d] *A $150 charge will be added to next utility bill.*
(d) Within 12 months of the previous waste of water. City may also require installation of a water meter and/or water restrictor at the user's expense.

Type(s) of Violations: (includes all **Violations** listed below, current and previous)

_____ 1) *Failure to control a controllable leak*
(If you need help locating the leak, please call the Water Conservation Coordinator at 333-6829.)

_____ 2) *Watering on an unassigned day*

_____ 3) *Watering between 10:00 A.M. & 6:00 P.M. from May 1 thru September 30*

_____ 4) *Washing down sidewalks, paved areas, buildings, etc.*

_____ 5) *Use of a hose without a positive shut off nozzle*

_____ 6) *Flooding gutter or drainage area over three (3) minutes*

_____ 7) *Overwatering, specially from Nov. 1 thru Feb. 28, or during or after rain*

_____ 8) *Other* _____

	Violations		
	Dates	**Time**	**Type(s)**
Current:			
Previous:			

Richard C. Prima, Jr.
Public Works Director

By: _____ Date:
Frank Beeler
Assistant Water/Wastewater Superintendent

Questions? Call the Water Conservation Coordinator at (209) 333-6829
See reverse for more information

LODI