

## Appendix L– Public Review Comments



April 3, 2007

**DEPARTMENT OF PUBLIC WORKS**

**Matt Machado, PE**  
Director

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**PUBLIC WORKS**

**APR 06 2007**

**ADMINISTRATION**

*Via Inter Office Mail*

Nick Pinhey, Director of Public Works  
City of Modesto  
P.O. 642  
Modesto, CA 95353

Re: City of Modesto/ Modesto Irrigation District Joint Urban Water Management Plan  
2005 Update (draft report)

Dear Nick:

I would like to thank your staff for forwarding a copy of the subject referenced report to Stanislaus County department of Public Works. I have reviewed the report and provide the following comments as part of the public review process:

1. The Salida growth projections appear to be too low. According to the report, the projected population in Salida in the year 2030 is 21,173. However, based upon the current SCP the population projections for the same time period is approximately 30,000.
2. In terms of adequate water supply and delivery, I feel that it would be important to discuss the need to maintain system pressure during peak hour and peak day demand.
3. It seems appropriate to discuss the need to expand and strengthen the distribution and transmission system to deliver surface waters to far reaches of the service area.
4. In terms of system reliability, it would seem appropriate to discuss backup power for surface water plant and groundwater wells.

Lastly, we would like to work collaboratively with the City of Modesto on creating the plan in anticipation that the plan will be used as a model and tool for the city and county to promote good regional development.

I look forward to hearing from you to discuss the foregoing.

Matt Machado, P.E.  
Director of Public Works

	2000	2001	2002	2003	2004	2005	2006
<b>Sub-Basin</b>							
Modesto	42,716.99	45,995.31	49,306.99	47,517.26	46,700.89	46,580.04	45,249.32
Turlock	37,497.58	40,860.12	43,538.05	42,251.09	41,961.57	41,440.57	40,775.15
Delta-Mendota	4,958.04	4,838	5,445.32	4,979.20	4,478.77	4,902.74	4,298.57
<b>Totals</b>	85,172.61	91,693.53	98,290.36	94,747.55	93,041.23	92,923.35	90,323.04
Average 2000-2005	42,716.99	45,995.31	49,306.99	47,517.26	46,700.89	46,580.04	45,249.32
Average 2000-2006	42,716.99	45,995.31	49,306.99	47,517.26	46,700.89	46,580.04	45,249.32

2005  
46,580.04  
41,440.57  
4,902.74  
236.73  
46,580.04

Change  
46,275 AS  
to ~~46,469~~ 46,270

Note:  
① Consider revising  
Water supply #s  
in UWMP w/ new #s

② Update "actual" 2005  
Water production  
GW = 46,580  
SW = 32,500  
79,086  
for 2005

DRAFT

increase by 5% from 2005 through buildout, or an annual compounded rate of 0.2%. For additional information on calculation of water use per sector, including unit water use factors for each customer classification, please refer to Chapter 4.2.

Table ES-4: Past, Current and Projected Number of Accounts and Water Deliveries (AFY)<sup>a,b,c,d,e</sup>

	Water Use Sectors	Single Family	Multi-Family	Commercial	Industrial	Inst/Gov	Landscape	Total	
2000	Metered 6486	Accounts	11,157	7,423	5,046	82	379	752	24,838
		Deliveries	7,255	12,376	13,323	6,739	736	232	40,662
	Unmetered	Accounts	50,812	0	0	0	0	0	50,812
		Deliveries	34,719	0	0	0	0	0	34,719
2005	Metered	Accounts	21,242	6,568	4,465	81	335	665	33,355
		Deliveries	13,813	10,950	11,788	6,674	652	206	44,083
	Unmetered	Accounts	50,812	0	0	0	0	0	50,812
		Deliveries	34,719	0	0	0	0	0	34,719
2010	Metered	Accounts	49,272	7,423	5,046	82	379	752	62,952
		Deliveries	30,926	12,376	13,323	6,739	736	232	64,332
	Unmetered	Accounts	32,162	0	0	0	0	0	32,162
		Deliveries	21,976	0	0	0	0	0	21,976
2015	Metered	Accounts	78,523	8,389	5,703	83	428	849	93,975
		Deliveries	49,832	13,987	15,057	6,804	832	263	86,775
	Unmetered	Accounts	13,512	0	0	0	0	0	13,512
		Deliveries	9,233	0	0	0	0	0	9,233
2020	Metered	Accounts	104,017	9,481	6,446	83	484	960	121,470
		Deliveries	66,030	15,808	17,018	6,870	941	297	106,963
	Unmetered	Accounts	0	0	0	0	0	0	0
		Deliveries	0	0	0	0	0	0	0
2025	Metered	Accounts	117,558	10,715	7,285	84	547	1,085	137,273
		Deliveries	73,902	17,866	19,233	6,937	1,063	335	119,337
	Unmetered	Accounts	0	0	0	0	0	0	0
		Deliveries	0	0	0	0	0	0	0
2030	Metered	Accounts	132,862	12,110	8,233	85	618	1,226	155,134
		Deliveries	82,799	20,192	21,737	7,004	1,201	379	133,313
	Unmetered	Accounts	0	0	0	0	0	0	0
		Deliveries	0	0	0	0	0	0	0

Footnotes:

- a. Institutional projections include churches and schools. Agricultural customers not identified.
- b. Assumes conversion to metered water use as described in the *Engineer's Report: Justification and Cost Allocation for Proposed Water System Improvement*, prepared for the City of Modesto (September 2, 2004). Estimated numbers of 2005 single and multi-family accounts were increased from projections cited in the Engineer's Report by 40% to reflect actual 2005 water demands.
- c. Buildout demand for the entire Modesto Water Service area is 133,313 AFY, from *City of Modesto Hydraulic Model Update* (West Yost & Associates, 2005) TM "Final Water Demand Evaluation", pg 25.

*No footnote discrepancies between  
JWR accounts*

*2) footnote*

- d. Projected buildout date assumed to be 2030 (vs. 2024 from the HMP) to be consistent with 2005 WWMP.
- e. Annual average water demands were extrapolated from current demands to 2030 buildout assuming number of accounts increase at an annual compounded rate of 2.5% for all sectors except industrial, with number of industrial accounts increasing at an annual compound rate of 0.2%.

**Other Uses**

“Other uses” are water deliveries to non-urban retail or wholesale customers. Examples of other uses may include water injected as a saline barrier or recycled water. Also included in this category are system water losses during delivery.

Because water use was estimated using per capita unit demand factors which were developed based on production, system losses are included in the demand projections above. Unaccounted for water and system losses have been estimated to comprise approximately 15 percent of total production<sup>5</sup>. This assumption is intended to provide a conservative estimate of water losses throughout the conveyance system. Actual water losses cannot be confirmed until the City has completed its current efforts to implement metering City-wide. Water demand, unaccounted for water, and total water use are documented in Table ES-5.

71,087  
Table ES-5 City of Modesto Total Water Use (AFY)

Water Use	2000	2005	2010	2015	2020	2025	2030
Water Demand	75,381	<del>78,802</del>	86,308	96,008	106,963	119,337	133,313
Unaccounted-for system losses <sup>a,b</sup>	13,302	13,906	15,231	16,943	18,876	21,059	23,526

Footnotes:

- a. Unaccounted for system losses are estimated as 15% of total supply, and are included in total demand projections.
- b. Losses may include leaks, flushing, fires, flow testing, backflushing, etc.

Table ES-3 presents future water supplies and demands for the City of Modesto. Figure ES-3 presents the same information in graphical form.

<sup>5</sup> The assumptions for unaccounted water and system losses were based on the *City of Modesto Hydraulic Model Update* (West Yost & Associates, 2005)

Modesto's Water Shortage Contingency Plan, refer to Chapter 10 of this document). As such, no additional demand reductions have been projected unless MID surface water supplies are reduced by more than 25 percent.

Table ES-7 contains estimated City of Modesto water supply shortfalls for normal years, as well as single and multiple dry years, through 2030. As shown in this table, the City of Modesto will continue to increase groundwater pumping until 2009, when the Phase Two MRWTP will be operational. At that time, groundwater pumping will decrease as demands north of the Tuolumne River are met by surface water in lieu of groundwater. These banked groundwater supplies are then available for use in meeting future demands.

The City is currently investigating the feasibility of additional future surface water supplies. Currently, the City is working with Turlock Irrigation District (TID) to bring additional treated surface water to augment the City's water supplies by 12,881 AFY (11.5 MGD). Preliminary estimates by TID project the future Surface Water Supply Project (SWSP) will be operational by 2011. Since the City and TID have not entered into a treatment and delivery agreement (TDA) as of the preparation of this document, treated water from the TID SWSP is not considered an assured water supply and is therefore not considered a supply at this time. Appendix B presents future water supply projections for the TID SWSP (Option A), as well as projections for a possible Phase Three of the MRWTP (Option B). The City will continue to pursue additional water resources to augment its water supplies to meet future demands.

Table ES-7 Projected Normal and Dry Year Supply and Demand for the City of Modesto and Outlying Areas (AFY)<sup>a,b,c</sup>

Year	Scenario	Demand	MID Deliveries	Groundwater Pumping	Operational Yield	Supply Deficit
2005	Normal	79,086	32,500	46,295	53,500	None
	Single Dry	78,802	26,402	52,400	53,500	None
	Multiple Dry	79,086		684		
	2006	80,057	31,114	48,943	53,500	None
	2007	81,353	29,721	51,632	53,500	None
	2008	82,746	28,328	54,418	53,500	918
	2009 <sup>d</sup>	84,505	55,683	28,822	53,500	None
	2010	86,308	52,803	33,505	53,500	None
2010	Normal	86,308	67,204	19,104	53,500	None
	Single Dry	86,308	52,803	33,505	53,500	None
	Multiple Dry					
	2011 <sup>e</sup>	88,154	64,324	23,830	53,500	None
	2012	90,047	61,444	28,603	53,500	None
	2013	91,986	58,563	33,423	53,500	None
	2014	93,972	55,683	38,289	53,500	None
	2015	96,008	52,803	43,205	53,500	None

VS. 46,580  
46,295

- d. Phase 2 of the MRWTP expected to be operational by mid-2009.
- e. Based on projected demands and estimated Operational Yield, the City will require new water supplies by 2025, based on multiple drought years. However, future studies will be required to determine the feasibility of whether demands will be met with only surface water, only groundwater, or a combination of both.

Table ES-8 presents the projected future retail urban demand and wholesale MID surface water supplies provided to urban customers under normal, single dry year, and multiple dry year conditions. Because MID is a wholesale water supplier, demand for MID supply is not expected to decrease in dry years. Although base MID supplies are reduced during dry years, the volume of water allocated to urban suppliers is a very small percentage of total available supply. As a result, while base supply allotments may be reduced in dry years, total supply available to urban customers is expected to meet the total urban demand for MID supplies. The difference between base supply and total supply is assumed to be available as an allocation on an optional basis at additional cost to the retail supplier.

**Table ES-8 Projected MID Normal and Dry Year Urban Supply and Demand (AFY)**

Year	Scenario	Modesto Urban Demand	Total Urban Demand	Available Urban Base Supply	Total Available Urban Supply	Supply Deficit
2005	Normal	32,507	32,507	32,507	32,507	None
	Single Dry	32,507	32,507	26,402	32,507	None
	Multiple Dry					
	2006	33,602	33,602	32,162	33,602	None
	2007	33,602	33,602	30,722	33,602	None
	2008	33,602	33,602	29,282	33,602	None
	2009	67,204	67,204	55,683	67,204	None
	2010	67,204	67,204	52,803	67,204	None
2010	Normal	67,204	67,204	67,204	67,204	None
	Single Dry	67,204	67,204	52,803	67,204	None
	Multiple Dry					
	2011	67,204	67,204	64,324	67,204	None
	2012	67,204	67,204	61,444	67,204	None
	2013	67,204	67,204	58,563	67,204	None
	2014	67,204	67,204	55,683	67,204	None
	2015	67,204	67,204	52,803	67,204	None
2015	Normal	67,204	67,204	67,204	67,204	None
	Single Dry	67,204	67,204	52,803	67,204	None
	Multiple Dry					
	2016	67,204	67,204	64,324	67,204	None
	2017	67,204	67,204	61,444	67,204	None
	2018	67,204	67,204	58,563	67,204	None
	2019	67,204	67,204	55,683	67,204	None
	2020	67,204	67,204	52,803	67,204	None

Table 2-3: Basis for Population Assumptions for City of Modesto and Outlying Areas Served by the City of Modesto

	City of Modesto	Empire	Salida	Waterford	Del Rio	Hickman	Grayson	Turlock	Bret Harte	Shackelford	West Modesto	North Ceres (Bystrom)
Base Population	192,468	3,903	17,168	8,265	2,970	822	1,874	2,057	5,161	5,170	6,096	4,518
Year of Base Population	2005	2000	2003	2003	2003	2003	2003	2003	2000	2000	2000	2000
Source of Base Population <sup>a</sup>	City of Modesto	2000 Census	Hydraulic Model Update	2000 Census	2000 Census	2000 Census	2000 Census					
Annual Growth Rate <sup>b</sup>	1.6% - 1.75%	1.6% - 1.75%	1.6% - 1.75%	1.6% - 1.75%	1.6% - 1.75%	1.6% - 1.75%	0%	0%	0.45%	0.45%	0.45%	0.45%
Buildout Population <sup>c</sup>	344,910	N/A	21,373	13,775	19,242	1,784	1,874	2,057	N/A	N/A	N/A	N/A
Source of Buildout Population <sup>d</sup>	CEDD Memo	N/A	Hydraulic Model Update	Zero growth assumption	N/A	N/A	N/A	N/A				

Footnotes:

- City of Modesto 2005 population provided by William Wong/City of Modesto. Base populations from 2000 Census accessed using [www.wikipedia.com](http://www.wikipedia.com). North Ceres projections based on Community and Economic Development Department May 4, 2006 "Final memo on Projected General Plan Buildout Population of the SOT" by Miguel Galvez (CEDD Memo). Projections for Ceres area were halved, as water service does not extend to all of Ceres. Base population for Waterford, Del Rio, Hickman, Grayson, and Turlock base don adjusted developed acreage in the City of Modesto Hydraulic Model Update (West Yost & Associates, 2005). Acreage converted to population assuming 5 homes per acre and 2.9 people per home.
- Annual growth rate assumed to be 1.6% through 2011, increasing to 1.75% in 2012 through buildout. Assumption based on July 27, 2006 "Estimated Sewer Flow Projections Technical Memorandum" by William Wong. Outlying areas assumed to grow at same rate as City of Modesto with the exception of Grayson and Turlock, which are assumed to be at buildout.
- City of Modesto buildout population based on CEDD Memo, which presents range from 333,640 to 356,843 people.
- Buildout populations from City of Modesto Hydraulic Model Update (West Yost & Associates, 2005) are based on total buildout ac converted to population assuming 5 homes per acre and 2.9 people per home.

See Table 2-4

Service Area

modeling being conducted by the USGS (City of Modesto, 2007). This operational yield, or ultimate amount of groundwater extraction, represents the amount of groundwater that can be extracted from the two groundwater subbasins without lowering groundwater levels below 40 feet ASL and potentially affecting long-term sustainability of the basin. Therefore, it can be assumed that the City of Modesto could potentially increase its annual groundwater extraction rates to volumes greater than are currently being pumped without adversely affecting the basin. The methodology for deriving this operational yield can be found in Appendix N. However, the City's current operational capacity for groundwater production is limited by the reliable pumping capacity of its existing wells.

The City of Modesto has elected to continue to diversify its water supply alternatives by developing additional surface water supplies to offset groundwater pumping. Phase Two of the MRWTP will provide an additional 33,602 AFY of surface water supplies to offset groundwater pumping to meet demands north of the Tuolumne River. The SWSP, similarly, could provide up to 12,881 AFY of surface water supplies to offset groundwater pumping to meet demands south of the Tuolumne River. The groundwater that is not pumped will be stored in the groundwater subbasins to be used by the City of Modesto for meeting future demands in normal and dry years and during periods of emergency. This conjunctive use arrangement will allow the City to optimize its water supplies to best meet demands under a range of hydrologic conditions. The City of Modesto is also evaluating a potential Phase Three MRWTP expansion, which could result in additional treated water deliveries. Appendix B presents water supply projections assuming the SWSP and/or Phase Three MRWTP expansion are pursued.

Current and projected future groundwater pumping can be seen in Table 3-2. The City has developed a groundwater budget that conservatively assumes that pumping at current levels (approximately 46,275 AFY, based on average pumping from 2000 through 2005 – see Table 3-1) will result in constant groundwater levels over time. Because demands are first met with surface water supplies and groundwater is used only to meet demands in excess of the surface water delivered, the Phase Two MRWTP will result in reductions in groundwater pumping. In years in which groundwater pumping falls below the current average pumping volume of 46,275 AFY, it is assumed that the unused groundwater is banked in the basin via in-lieu water use for later use.

**Table 3-2: Amount of Groundwater Projected to be Pumped in the City of Modesto and Outlying Areas<sup>a</sup> - Normal Average Annual Demands<sup>a</sup>**

Basin Name	2005 <sup>b</sup>	2010	2015	2020	2025	2030
Modesto and Turlock Subbasins (Total) <sup>c</sup>	46,295	19,104	28,804	39,759	52,133	66,109
% of Total Supply	58%	22%	30%	37%	44%	50%

Footnotes:

- a. Total groundwater pumped is calculated as demand minus MID surface water supply. In 2009, completion of Phase Two of the MRWTP yields an additional 33,602 AFY of MID surface supply. Demands for years 2010, 2015, 2020, 2025, and 2030 are projected to be 87,539; 97,246; 108,028; 120,006; 133,313 AFY, respectively, as shown in Table ES-5.
- b. Actual groundwater pumped in 2005.
- c. Includes groundwater pumped in Salida, Waterford, Empire, Del Rio, North Ceres, Hickman, Turlock.

The City of Modesto's future water supply planning incorporates sufficient future surface water supplies to allow the City of Modesto to meet demands primarily through the use of surface water, banking groundwater for future use and protecting the basin from overdraft. Groundwater pumping would increase in dry years to meet any demands unmet by available surface water supplies. Based on historical groundwater production and basin recovery (as observed from the monitoring water levels), short-term 'overpumping' of the groundwater subbasins (such that groundwater levels drop below the 40 feet ASL minimum groundwater level) may also occur, as needed, to meet supplies without causing any significant

*Should this be Modesto supply?*

Table 3-8 displays the existing and planned sources for MID and TID urban water supplies.

**Table 3-8: City of Modesto Wholesalers Identified and Quantified (AFY)**

Wholesaler	2005	2010	2015	2020	2025	2030
MID - Tuolumne River	32,500	67,204	67,204	67,204	67,204	67,204
Total	32,500	67,204	67,204	67,204	67,204	67,204

**3.4.2 Modesto Irrigation District Wholesale Supplies**

MID does not purchase wholesale water supplies.

**3.5 Summary of Current and Future Water Supplies**

**Water Code § 10631 (b)**

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

*(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

*(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.*

*(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department 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.*

*(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

*(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

**3.5.1 Current and Future Supplies: City of Modesto**

Table 3-9 summarizes the current and projected future water supplies for the City of Modesto. Increased future water purchases from MID are projected to occur in 2009 coinciding with completion of the Phase Two MRWTP expansion.

Table 3-9: City of Modesto Current and Planned Water Supplies (AFY)

Supply	2005	2010	2015	2020	2025	2030
Wholesale Water Providers						
Modesto Irrigation District	32,507	67,204	67,204	67,204	67,204	67,204
Supplier produced groundwater <sup>a</sup>	46,205 <sup>580</sup>	19,104	28,804	39,759	52,133	66,109
Supplier surface diversions	0	0	0	0	0	0
Transfers in or out	0	0	0	0	0	0
Exchanges In or out	0	0	0	0	0	0
Recycled Water (projected use)	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Other	0	0	0	0	0	0
<b>Total<sup>b</sup></b>	<b>78,802<sup>79,006</sup></b>	<b>86,308</b>	<b>96,008</b>	<b>106,963</b>	<b>119,337</b>	<b>133,313</b>

Footnotes:

- a. Groundwater pumping is increased to meet demands until the Phase Two MRWTP is operational in 2009, allowing an additional 33,602 AFY of demand to be met with surface water supplies.
- b. Buildout demand for the entire Modesto Water Service area is 133,313 AFY per WYA HMP TM "Final Water Demand Evaluation", pg 25. Projected buildout date assumed to be 2030 (vs. 2024 from the HMP) to be consistent with 2005 WWMP. Annual average water demands were extrapolated from current demands to 2030 buildout assuming number of accounts increase at an annual compounded rate of 2.5% for all sectors except industrial, with number of industrial accounts increasing at an annual compound rate of 0.2%.

3.5.2 Current and Future Supplies: Modesto Irrigation District

Table 3-10 summarizes the current and projected future wholesale water supplies from MID to urban suppliers. In 2009, MID urban supplies are projected to double with the completion of Phase Two of the MRWTP.

Table 3-10: MID Current and Planned Water Supplies (AFY)

Water Purchased From	2005	2010	2015	2020	2025	2030
Wholesale Water Providers	0	0	0	0	0	0
Supplier produced groundwater	0	0	0	0	0	0
Supplier surface diversions	32,507	67,204	67,204	67,204	67,204	67,204
Transfers in or out	0	0	0	0	0	0
Exchanges In or out	0	0	0	0	0	0
Recycled Water (projected use)	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
<b>Total</b>	<b>32,507</b>	<b>67,204</b>	<b>67,204</b>	<b>67,204</b>	<b>67,204</b>	<b>67,204</b>

Table 4-1: Unit Water Use Factor by Water Use Sector<sup>a</sup>

Water Use Sector	Unit Water Use Factor (gpd/account)
Single Family Residential (flat-rate)	610
Single Family Residential (metered-rate)	519
Multi-Family (2-4 units)	828
Multi-Family (5+ units)	5907
Commercial	2357
Industrial	73554
Churches	1933
Schools	1281
Landscape	276

Footnotes:

<sup>a</sup> Water use factors from City of Modesto *Water Utility Cost of Service Rate Study*, Foresight Consulting Services, September, 2004.

Table 4-2 summarizes the City of Modesto's past, current and projected number of water accounts and deliveries by customer type. These customers are within the City of Modesto and its Sphere of Influence (SOI) with the total in 2030 equal to projected demands for the City and SOI at buildout. It should be noted that the year of buildout has not been determined. Water demands for 2030 are assumed to equal buildout demands as a conservative planning assumption; buildout may actually occur later than 2030.

Table 4-2: City of Modesto Past, Current and Projected Number of Accounts and Water Deliveries (AFY)<sup>a,b,c,d,e</sup>

		Water Use Sectors	Single Family	Multi-Family	Commercial	Industrial	Inst/Gov	Landscape	Total
2000	Metered	Accounts	11,157	7,423	5,046	82	379	752	24,838
		Deliveries	7,255	12,376	13,323	6,739	736	232	40,662
	Unmetered	Accounts	50,812	0	0	0	0	0	50,812
		Deliveries	34,719	0	0	0	0	0	34,719
2005	Metered	Accounts	21,242	6,568	4,465	81	335	665	33,355
		Deliveries	13,813	10,950	11,788	6,674	652	206	44,083
	Unmetered	Accounts	50,812	0	0	0	0	0	50,812
		Deliveries	34,719	0	0	0	0	0	34,719
2010	Metered	Accounts	49,272	7,423	5,046	82	379	752	62,952
		Deliveries	30,926	12,376	13,323	6,739	736	232	64,332
	Unmetered	Accounts	32,162	0	0	0	0	0	32,162
		Deliveries	21,976	0	0	0	0	0	21,976
2015	Metered	Accounts	78,523	8,389	5,703	83	428	849	93,975
		Deliveries	49,832	13,987	15,057	6,804	832	263	86,775
	Unmetered	Accounts	13,512	0	0	0	0	0	13,512
		Deliveries	9,233	0	0	0	0	0	9,233

		Water Use Sectors	Single Family	Multi-Family	Commercial	Industrial	Inst/Gov	Landscape	Total
2020	Metered	Accounts	104,017	9,481	6,446	83	484	960	121,470
		Deliveries	66,030	15,808	17,018	6,870	941	297	106,963
	Unmetered	Accounts	0	0	0	0	0	0	0
		Deliveries	0	0	0	0	0	0	0
2025	Metered	Accounts	117,558	10,715	7,285	84	547	1,085	137,273
		Deliveries	73,902	17,866	19,233	6,937	1,063	335	119,337
	Unmetered	Accounts	0	0	0	0	0	0	0
		Deliveries	0	0	0	0	0	0	0
2030	Metered	Accounts	132,862	12,110	8,233	85	618	1,226	155,134
		Deliveries	82,799	20,192	21,737	7,004	1,201	379	133,313
	Unmetered	Accounts	0	0	0	0	0	0	0
		Deliveries	0	0	0	0	0	0	0

Footnotes:

- a. Institutional projections include churches and schools. Agricultural customers not identified.
- b. Assumes conversion to metered water use as described in the *Engineer's Report: Justification and Cost Allocation for Proposed Water System Improvement*, prepared for the City of Modesto (September 2, 2004). Estimated numbers of 2005 single and multi-family accounts were increased from projections cited in the Engineer's Report by 40% to reflect actual 2005 water demands.
- c. Buildout demand for the entire Modesto Water Service area is 133,313 AFY, from *City of Modesto Hydraulic Model Update* (West Yost & Associates, 2005) TM "Final Water Demand Evaluation", pg 25.
- d. Projected buildout date assumed to be 2030 (vs. 2024 from the HMP) to be consistent with 2005 WWMP.
- e. Annual average water demands were extrapolated from current demands to 2030 buildout assuming number of accounts increase at an annual compounded rate of 2.5% for all sectors except industrial, with number of industrial accounts increasing at an annual compound rate of 0.2%.

**4.2.2 Past, Current and Projected Water Use: Modesto Irrigation District**

MID does not deliver water directly to urban customers, as shown in Table 4-3.

*Need to reconcile*

### 4.3 Sales to Other Agencies

#### 4.3.1 City of Modesto Sales to Other Agencies

The City of Modesto does not currently sell water to other agencies, as shown in Table 4-4.

Table 4-4: Sales to Other Agencies (AFY)

Water Distributed	2000	2005	2010	2015	2020	2025	2030
Total	0	0	0	0	0	0	0

#### 4.3.2 Modesto Irrigation District Sales to Other Agencies

Although MID is primarily an agricultural supplier, MID currently sells water to the City of Modesto for urban use only, as shown in Table 4-5.

Table 4-5: Sales to Other Agencies (AFY)

Water Distributed	2000 <sup>a</sup>	2005 <sup>a</sup>	2010	2015	2020	2025	2030
City of Modesto	33,711	32,500	67,204	67,204	67,204	67,204	67,204
Total	33,711	32,500	67,204	67,204	67,204	67,204	67,204

Footnotes:

- a. Years 2000 and 2005 reflect actual deliveries to the City of Modesto.

#### 4.3.3 City of Modesto Other Uses

“Other uses” are water deliveries to non-urban retail or wholesale customers. Examples of other uses may include water injected as a saline barrier or system water losses during delivery. Because water use was estimated using per capita unit demand factors which are based on production information, system losses are included in the demand projections. Unaccounted for water and system losses are assumed to comprise approximately 15 percent of total production. This assumption is intended to provide a conservative estimate of water losses throughout the conveyance system. Actual water losses cannot be confirmed until the City has completed its current efforts to implement metering City-wide. Estimates of unaccounted-for system losses are documented in Table 4-6.

Table 4-6 City of Modesto Additional Water Uses and Losses (AFY)

Water Use	2000	2005	2010	2015	2020	2025	2030
Unaccounted-for system losses <sup>a,b</sup>	13,302	13,906	15,231	16,943	18,876	21,059	23,526
Total	13,302	13,906	15,231	16,943	18,876	21,059	23,526

Footnotes:

- a. Unaccounted for system losses are estimated as 15% of total production, and are included in total demand projections.
- b. Losses may include leaks, flushing, fires, flow testing, backflushing, etc.

Table 4-7 summarizes the current and projected total water demands for the City’s service area through the year 2030.

78,683

46,776 46,580 DRAFT

Table 6-4 Projected City of Modesto Normal and Dry Year Supply and Demand (AFY)<sup>a,b</sup>

Year	Scenario	Demand <sup>c</sup>	MID Deliveries	Groundwater Pumping	Operational Yield	Supply Deficit
2005	Normal <sup>e</sup>	<del>4,000</del> 32,500	32,500	46,295	53,500	None
	Single Dry	<del>78,802</del>	26,402	52,400	53,500	None
	Multiple Dry	7,000				
	2006	80,057	31,114	48,943	53,500	None
	2007	81,353	29,721	51,632	53,500	None
	2008	82,746	28,328	54,418	53,500	918
	2009 <sup>d</sup>	84,505	55,683	28,822	53,500	None
	2010	86,308	52,803	33,505	53,500	None
	2010	Normal	86,308	67,204	19,104	53,500
Single Dry		86,308	52,803	33,505	53,500	None
Multiple Dry						
2011 <sup>e</sup>		88,154	64,324	23,830	53,500	None
2012		90,047	61,444	28,603	53,500	None
2013		91,986	58,563	33,423	53,500	None
2014		93,972	55,683	38,289	53,500	None
2015		96,008	52,803	43,205	53,500	None
2015	Normal	96,008	67,204	28,804	53,500	None
	Single Dry	96,008	52,803	43,205	53,500	None
	Multiple Dry					
	2016	98,094	64,324	33,770	53,500	None
	2017	100,231	61,444	38,787	53,500	None
	2018	102,421	58,563	43,858	53,500	None
	2019	104,664	55,683	48,981	53,500	None
	2020	106,963	52,803	54,160	53,500	660
2020	Normal	106,963	67,204	39,759	53,500	None
	Single Dry	106,963	52,803	54,160	53,500	660
	Multiple Dry					
	2021	109,319	64,324	44,995	53,500	None
	2022	111,733	61,444	50,289	53,500	None
	2023	114,206	58,563	55,643	53,500	2,143
	2024	116,740	55,683	61,057	53,500	7,557
	2025 <sup>e</sup>	119,337	52,803	66,534	53,500	13,034

2005  
 2006  
 2007  
 2008  
 2009<sup>d</sup>  
 2010  
 2011<sup>e</sup>  
 2012  
 2013  
 2014  
 2015  
 2016  
 2017  
 2018  
 2019  
 2020  
 2021  
 2022  
 2023  
 2024  
 2025<sup>e</sup>

## Chapter 9 Supply and Demand Comparison

### Water Code § 10635 (a),(c)

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

### 9.1 Normal Year

#### 9.1.1 City of Modesto Normal Year Supply, Demand and Comparison

##### City of Modesto Normal Year Supply

As described above, it is assumed that the City of Modesto will meet near-future demands primarily through surface water supplies. Reductions in groundwater pumping below the 2000 to 2005 average production of 46,275 AFY will be stored in the groundwater basin for future use. Until 2009, the City of Modesto will continue to use groundwater pumping to meet demands. In 2009, the Phase Two of the MRWTP will come online, and groundwater production will be offset by increased surface water use, and the groundwater bank balance will begin to accumulate. As shown in Table 9-1, the City of Modesto's normal year water supply is projected to grow to a buildout normal year water supply of approximately 133,313 AFY. This represents 169 percent growth in supply as compared to 2005.

Table 9-1 City of Modesto Normal Water Supply (AFY)

Supply	2005	2010	2015	2020	2025	2030
MID Supply	32,507	67,204	67,204	67,204	67,204	67,204
Groundwater Pumping	46,295	19,104	28,804	39,759	52,133	66,109
Total <sup>a</sup>	78,802	86,308	96,008	106,963	119,337	133,313
% of 2005		110%	122%	136%	151%	169%

Footnotes:

a. Total supply includes MID supply, SWSP supply, and groundwater pumping.

##### City of Modesto Normal Year Demand

As shown in Table 9-2, the City of Modesto's General Plan plus Sphere of Influence buildout water demand is projected to reach approximately 133,313 AFY in the year 2030. This represents a demand increase of approximately 169 percent as compared to 2005 demands.

Table 9-2 City of Modesto Normal Year Water Demands (AFY)

Demand	2005	2010	2015	2020	2025	2030
Demand	78,802	86,308	96,008	106,963	119,337	133,313
% of 2005		110%	122%	136%	151%	169%

## Leslie Dumas

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**From:** William Wong [WWong@modestogov.com]  
**Sent:** Monday, April 09, 2007 9:07 AM  
**To:** Leslie Dumas; Alyson Watson  
**Subject:** 2005 UWMP comments

**Attachments:** Scan doc for uwmp.pdf



Scan doc for  
uwmp.pdf (1 MB)

- 1) Update actual 2005 water production to 46,580 AFY (GW) + 32,506 AFY (SW) = 79,086 AFY.
- 2) Change GW average 2000-2005 from 46,275 to 46,470 AFY.
- 3) Address discrepancies between "Past, current, and Projected Number of Accts and Water Deliveries" for 2000 and 2005 in Table ES-4 and 4-2. Why are the most of the accounts for 2000 and 2010 the same?

We received one (1) verbal comments from Mr.. Ross Campbell, former City of Modesto Public Works Director, during the comment period:

- 1) Pointed out that the are water distribution issues within the City's contiguous water distribution pipeline.
- 2) Should use SCADA data as a more accurate forecast of water demands.
- 3) The build-out population projections for Del Rio in Table 2-3 and 2-4 are inconsistent. Please reconcile.
- 4) Agrees with the groundwater banking description, but questions estimated of Operational Yield.
- 5) Since these are estimates, suggests rounding out population projections to nearest 1,000s (note: maybe water demands too?)
- 6) Projected water demands/supply do not address drops in water system pressure- thru water meters.
- 7) User's Guide - alludes to reductions of GW pumping - "not true"? (Note: I don't know how to address this.)

**Matt Machado, P.E. Director of Public Works Stanislaus County**

<b>Comment #</b>	<b>Comment</b>	<b>Response</b>
1	The Salida growth projections appear to be to low. According to the report, the projected population in Salida in the year 2030 is 21,173. However, based upon the current SCP the population projections for the same timer period is approximately 30,000	The Salida population numbers are from the 2005 <i>Hydraulic Model Plan</i> with acreage converted to pop assuming 5 homes per acre and 2.9 people per home. This is a projection and, as such, will likely change in future versions of the UWMP.
2	In terms of adequate water supply and delivery, I feel that it would be important to discuss the need to maintain system pressure during peak hour and peak day demand.	Duly noted; however system pressures are not part of an UWMP.
3	It seems appropriate to discuss the need to expand and strengthen the distributions and transmission system to deliver surface waters to far reaches of the service area.	Duly noted; however transmission system capacities are not part of an UWMP.
4	In terms of system reliability, it would seem appropriate to discuss backup power for surface water plant and groundwater wells.	UWMP text has been modified to incorporate the comment.

**City of Modesto Comments – Hard Copy Hand Written**

<b>Page #</b>	<b>Comment</b>	<b>Response</b>
Entire Document	Change 46,275 average to 46,270	Numbers have been recalculated and updated in the text.
Entire Document	Consider revising water supply #s in UWMP w/ new #s	Numbers in the text have been updated to reflect actual 2005 data.
Entire Document	Update “actual” 2005 water production GW=46,580 SW=32,506 =79,086 APY total for 2005	Numbers in the text have been updated to reflect actual 2005 data.
ES-11	Footnote discrepancies between user accounts. Refer to hard copy for additional comments	Numbers in the text have been updated to reflect actual 2005 data.
ES-12	Table ES-5 Water Demand for 2005 should be 79,087	Numbers in the text have been updated to reflect actual 2005 data.
ES-16	Table ES-7 For year 2005, Normal Demand = 79,086 Single Dry Demand = 79,086	Numbers in the text have been updated to reflect actual 2005 data.

	Normal MID Deliveries = 32,506 Single Dry GW Pumping = 52,684 Normal GW Pumping – 46, 295 vs. 46,580	
ES18	Table ES-8 Normal Total Urban Demand = 32,506	Numbers in the text have been updated to reflect actual 2005 data.
2-6	Change Buildout Pop Del Rio to be consistent. See Table 2-4	Numbers have been recalculated and updated in the text.
3-3	Table 3-2 Modesto and Turlock Subbasins 2005 = 46,580	Numbers in the text have been updated to reflect actual 2005 data.
3-8	Table 3-8 2005 = 32,506	Numbers in the text have been updated to reflect actual 2005 data.
3-9	Table 3-9 2005 Supply MID = 32,506 Supplier produced GW= 46,580 Total = 79,086	Numbers in the text have been updated to reflect actual 2005 data.
3-9	Table 3-10 2005 Supplier surface diversions = 32,506 Total = 32,506	Numbers in the text have been updated to reflect actual 2005 data.
4-2	Table 4-2 MF #s correct for 2000 and 2005	Numbers in the text have been updated to reflect actual 2005 data.
4-3	Table 4-2 Footnotes – need to reconcile “40%” “water demands”	Numbers in the text have been updated to reflect actual 2005 data.
4-5	Table 4-5 2005 = 32,506	Numbers in the text have been updated to reflect actual 2005 data.
6-5	2005 Demand Normal = 78,683 Single Dry = 79,086 MID Deliveries Normal = 32,506 GW Pumping Normal = 46,580 Footnote © check references	Numbers in the text have been updated to reflect actual 2005 data.
9-1	Table 9-1 footnotes: Delete SWSP supply	Numbers have been recalculated and updated in the text.

**City of Modesto Comments - Emailed**

<b>Comment #</b>	<b>Comment</b>	<b>Response</b>
1	Update actual 2005 water production to 46,580 AFY (GW) + 32,506 AFY (SW) = 79,086	Numbers in the text have been updated to reflect actual 2005 data.
2	Change GW average 2000-2005 from 46,275 to 46,470	Numbers in the text have been updated to reflect actual 2000 and 2005 data.
3	Address discrepancies between “Past, current, and Projected Number of Accts and Water Deliveries” for 2000 and 2005 in Table ES-5 and 4-2. Why are the most of the accounts for 2000 and 2010 the same?	Numbers in the text have been updated to reflect actual 2000 and 2005 data.

**Verbal Comment: Mr. Ross Campbell, former City of Modesto Public Works Director**

<b>Comment #</b>	<b>Comment</b>	<b>Response</b>
1	Pointed out that there are water distribution issues within the City’s contiguous water distribution pipeline.	Duly noted; however water system distribution is not part of an UWMP.
2	Should use SCADA data as a more accurate forecast of water demands.	Numbers in the text have been updated to reflect actual 2005 data.
3 (p. 2-6, 2-7)	The build-out population projections for Del Rio in Table 2-3 and 2-4 are inconsistent. Please reconcile.	Numbers have been recalculated and updated in the text.
4	Agrees with the groundwater banking description, but questions estimated of Operational Yield.	Duly noted; however, the operational yield is an interim number until additional studies can be conducted to determine a safe yield value for the subbasins.
5	Since these are estimates, suggests rounding out population projections to nearest 1,000’s (note: maybe water demands too?).	Comment noted.
6	Projected water demands/supply do not address drops in water system pressure – thru water meters.	True; UWMP supply/demand comparison intended for supply evaluation purposed and not intended to be a Water Systems Master Plan.

7	User's Guide – alludes to reductions of GW pumping – “not true?” (Note: I don't know how to address this.(city))	Unclear what comment refers to.
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