

# CITY OF KERMAN



## 2015 URBAN WATER MANAGEMENT PLAN

March 2017

Prepared by:



## TABLE OF CONTENTS

CHAPTER 1	INTRODUCTION AND OVERVIEW .....	1
1.1.	Background and Purpose .....	1
1.2.	Urban Water Management Planning and the California Water Code .....	1
1.2.1.	Urban Water Management Planning Act of 1983 .....	1
1.2.2.	Applicable changes to the Water Code since 2010 .....	2
1.2.3.	Water Conservation Act of 2009 (SB X7-7) .....	3
1.3.	Urban Water Management Plan in Relation to Other Planning Efforts .....	3
1.4.	UWMP Organization .....	4
CHAPTER 2	PLAN PREPARATION .....	5
2.1.	Introduction .....	5
2.2.	Basis for Preparing a Plan .....	5
2.2.1.	Public Water Systems.....	6
2.2.2.	Agencies Serving Multiple Service Areas/Public Water Systems.....	6
2.3.	Individual or Regional Planning and Compliance.....	7
2.4.	Fiscal or Calendar Year and Units of Measure .....	7
2.4.1.	Fiscal or Calendar Year .....	7
2.4.2.	Reporting Complete 2015 Data .....	7
2.4.3.	Units of Measure.....	7
2.5.	Coordination and Outreach .....	8
2.5.1.	Wholesale and Retail Coordination .....	8
2.5.2.	Coordination with Other Agencies and the Community.....	9
2.5.3.	Notice to Cities and Counties.....	9
CHAPTER 3	SYSTEM DESCRIPTION .....	11
3.1.	General Description .....	11
3.2.	Service Area Maps.....	12
3.3.	Service Area Climate .....	12
3.4.	Service Area Population.....	13
CHAPTER 4	SYSTEM WATER USE.....	15
4.1.	Introduction .....	15

---

---

4.2.	Recycled versus Potable and Raw Water Demand .....	15
4.3.	Water Use by Sector .....	15
4.4.	Distribution System Losses .....	18
4.5.	Future Water Savings.....	19
4.6.	Water Use for Lower Income Households.....	20
4.7.	Climate Change .....	21
CHAPTER 5 BASELINES AND TARGETS .....		23
5.1.	Introduction .....	23
5.2.	Updating Calculations from 2010 UWMP .....	23
5.2.1.	Target Method .....	23
5.2.2.	SBX7-7 Verification Form .....	24
5.3.	Baseline Periods.....	25
5.3.1.	Determination of the 10-15 Year Baseline Period (Baseline) .....	25
5.3.2.	Determination of the 5 Year Baseline (Target Confirmation).....	26
5.4.	Service Area Population.....	26
5.4.1.	Population Methodology .....	26
5.5.	Gross Water Use .....	27
5.6.	Baseline Daily per Capita Water Use .....	29
5.7.	2015 and 2020 Targets.....	30
5.7.1.	Target Method .....	31
5.7.2.	Target Confirmation – Use of 5 Year Baseline .....	31
5.7.3.	2015 Interim Urban Water Use Target .....	31
5.7.4.	Baselines and Targets Summary .....	32
5.8.	2015 Compliance Daily per Capita Water Use .....	32
5.8.1.	Meeting the 2015 Target .....	32
5.8.2.	Adjustments to Gross Water Use.....	33
CHAPTER 6 SYSTEM SUPPLIES.....		34
6.1.	Purchased Water.....	34
6.2.	Groundwater.....	34
6.2.1.	Groundwater Quality .....	35
6.2.2.	Basin Description .....	36

---

---

6.2.3. Groundwater Management .....	37
6.2.4. Overdraft Conditions.....	39
6.2.5. Historical Pumping .....	40
6.2.6. Groundwater Banking.....	40
6.3. Surface Water .....	40
6.4. Stormwater .....	41
6.5. Wastewater and Recycled Water .....	41
6.5.1. Recycled Water Coordination .....	41
6.5.2. Wastewater Collection, Treatment, and Disposal .....	41
6.5.3. Recycled Water System.....	45
6.5.4. Recycled Water Beneficial Uses .....	45
6.5.5. Actions to Encourage and Optimize Future Recycled Water Use.....	48
6.6. Desalinated Water Opportunities.....	48
6.7. Exchanges or Transfers .....	49
6.8. Future Water Projects.....	49
6.9. Summary of Existing and Planned Sources .....	50
6.10. Climate Change Impacts to Supply .....	53
CHAPTER 7 WATER SUPPLY RELIABILITY ASSESSMENT .....	54
7.1. Introduction .....	54
7.2. Constraints on Water Sources .....	54
7.2.1. Water Quality.....	54
7.2.2. Climatic Changes .....	55
7.2.3. Legal Constraints.....	56
7.3. Reliability by Type of Year.....	56
7.4. Supply and Demand Assessment .....	57
7.4.1. Normal Year .....	57
7.4.2. Single Dry Year .....	58
7.4.3. Multiple Dry year .....	58
7.5. Regional Supply Reliability .....	59
CHAPTER 8 WATER SHORTAGE CONTINGENCY PLANNING .....	60
8.1. Introduction .....	60

---

---

8.2. Stages of Action .....	61
8.3. Prohibitions on End Uses .....	63
8.3.1. Landscape Irrigation.....	65
8.3.2. Commercial, Industrial, Institutional (CII).....	65
8.3.3. Water Features and Swimming Pools.....	66
8.3.4. Defining Water Features.....	66
8.3.5. Other.....	66
8.4. Penalties, Charges, Other Enforcement of Prohibitions .....	67
8.5. Consumption Reduction Methods .....	67
8.5.1. Categories of Consumption Reduction Methods.....	67
8.5.2. Rate Structures.....	69
8.6. Determining Reductions .....	69
8.7. Revenue and Expenditure Impacts .....	70
8.8. Resolution or Ordinance .....	70
8.9. Catastrophic Supply Interruption.....	70
8.10. Minimum Supply Next Three Years.....	71
CHAPTER 9 DEMAND MANAGEMENT MEASURES.....	73
9.1. Introduction .....	73
9.2. Demand Management Measures for Retail Agencies .....	73
9.2.1. Water Waste Prevention Ordinance.....	74
9.2.2. Metering.....	74
9.2.3. Conservation Pricing .....	75
9.2.4. Public Education and Outreach.....	75
9.2.5. Programs to Assess and Manage Distribution System Real Loss.....	75
9.2.6. Water Conservation Program Coordination and Staffing Support.....	76
9.2.7. Other Demand Management Measures .....	76
9.3. Implementation over the Past Five Years.....	77
9.4. Planned Implementation to Meet Water Use Targets .....	78
9.5. Members of the California Urban Water Conservation Council.....	78
CHAPTER 10 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION .....	80
10.1. Inclusion of all 2015 Data.....	80

---

---

10.2. Notice of Public Hearing .....	80
10.2.1. Notice to Cities and Counties.....	80
10.2.2. Notice to the Public.....	80
10.3. Public Hearing and Adoption .....	81
10.3.1. Adoption .....	81
10.4. Plan Submittal .....	82
10.4.1. Submitting a UWMP to DWR .....	82
10.4.2. Submitting UWMP to the California State Library.....	82
10.4.3. Submitting UWMP to the Cities and Counties.....	82
10.5. Public Availability .....	83
10.6. Amending an Adopted Plan .....	83

Appendix A URBAN WATER MANAGEMENT PLAN ACT

Appendix B WATER CONSERVATION ACT (SB X7-7)

Appendix C NOTIFICATION LETTERS

Appendix D SERVICE AREA MAP

Appendix E CLIMATE CHANGE VULNERABILITY ASSESSMENT

Appendix F SB X7-7 VERIFICATION FORM

Appendix G GROUNDWATER BULLETIN 118

Appendix H FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

Appendix I WATER SHORTAGE CONTINGENCY PLAN

Appendix J WATER WASTING VIOLATIONS FROM CITY OF KERMAN MUNICIPAL CODE

Appendix K RESOLUTION APPROVING OUTDOOR WATERING SCHEDULE

Appendix L MODEL WATER EFFICIENT LANDSCAPE ORDINANCE

Appendix M RESOLUTION APPROVING FY 2016-17 RATE INCREASE

Appendix L NOTICE OF PUBLIC HEARING (not included in this Draft Version)

Appendix O ADOPTING RESOLUTION (not included in this Draft Version)

Appendix P UWMP COMPLETION CHECKLIST

## **List of Tables**

Table 1-1 Changes to the CWC since 2010 .....	2
Table 2-1 Retail Only: Public Water Systems (Standard Table 2-1) .....	6

---

---

Table 2-2 Plan Identification (Standard Table 2-2) .....	7
Table 2-3 Agency Identification (Standard Table 2-3) .....	8
Table 2-4 Water Supplier Information Exchange (Standard Table 2-4) .....	9
Table 3-1 Planning Area Land Use .....	11
Table 3-2 Climate Data.....	13
Table 3-3 Population - Current and Projected .....	14
Table 4-1 Total Number of User Accounts in 2015.....	16
Table 4-2 Demands for Potable and Raw Water – Actual (Standard Table 4-1).....	17
Table 4-3 Projected Number of Total Connections by User Type.....	17
Table 4-4 Demands for Potable and Raw Water – Projected (Standard Table 4-2) .....	18
Table 4-5 Total Water Demands (Standard Table 4-3) .....	18
Table 4-6 12 Month Water Loss Audit Reporting (Standardized Table 4-4).....	19
Table 4-7 Projected Number of Additional Low Income Housing Units .....	21
Table 4-8 Projected Water Use Needed for Additional Low Income Housing Units .....	21
Table 4-9 Inclusion in Water Use Projections (Standard Table 4-5) .....	21
Table 5-1 Service Area Population (SB X7-7 Table 3).....	27
Table 5-2 Annual Gross Water Use (SB X7-7 Table 4).....	28
Table 5-3 Gallons Per Capita Per Day GPCD (SB X7-7 Table 5) .....	29
Table 5-4 Summary of baselines and current consumption (SB X7-7 Table 6).....	30
Table 5-5 Target Method 1 20% Reduction (SB X7-7 Table 7-A) .....	31
Table 5-6 Confirm Minimum Reduction for 2020 Target (SB X7-7 Table 7-F) .....	31
Table 5-7 2015 Interim Target GPCD (SB X7-7 Table 8) .....	32
Table 5-8 Baselines and Targets Summary (Standard Table 5-1) .....	32
Table 5-9 2015 Compliance (Standard Table 5-2).....	33
Table 6-1 Existing Groundwater Well Operation .....	34
Table 6-2 Groundwater Quality by Well .....	35
Table 6-3 Groundwater Volume Pumped.....	40
Table 6-4 Wastewater Collected Within Service Area in 2015 (Standard Table 6-2) .....	42
Table 6-5 Wastewater Treatment and Discharge Within Service Area in 2015 (Standard Table 6-3) .....	44
Table 6-6 Current and Projected Recycled Water Direct Beneficial Uses Within Service Area (Standard Table 6-4) .....	46

---

---

Table 6-7 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual (Standard Table 6-5) .47
Table 6-8 Methods to Expand Future Recycled Water Use (Standard Table 6-6) .....48
Table 6-9 Expected Future Water Supply Projects or Programs (Standardized Table 6-7) .....50
Table 6-10 Water Supplies — Actual (Standardized Table 6-8) .....50
Table 6-11 Water Supplies — Projected (Standard Table 6-9) .....52
Table 7-1 Average Chromium 6 Concentration .....55
Table 7-2 Basis of Water Year Data (Standard Table 7-1).....57
Table 7-3 Normal Year Supply and Demand Comparison (Standard Table 7-2).....58
Table 7-4 Single Dry Year Supply and Demand Comparison (Standard Table 7-3).....58
Table 7-5 Multiple Dry Years Supply and Demand Comparison (Standard Table 7-4) .....58
Table 8-1 Stages of Water Shortage Contingency Plan (Standard Table 8-1).....62
Table 8-2 Restrictions and Prohibitions on End Uses (Standard Table 8-2) .....64
Table 8-3 Stages of Water Shortage Contingency Plan - Consumption Reduction Methods (Standard Table 8-3) .....67
Table 8-4 Preparation Actions for a Catastrophe .....71
Table 8-5 Minimum Supply Next Three Years (Standard Table 8-4).....72
Table 10-1 Notification to Cities and Counties (Standard Table 10-1) .....82

## ABBREVIATIONS

AB	Assembly Bill
ac-ft	Acre-Feet
BMP	Best Management Practices
CCR	California Code of Regulations
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
City	City of Kerman
COG	Council of Governments
DMM	Demand Management Measures
DWR	Department of Water Resources
DDW	Division of Drinking Water
eARDWP	Electronic Annual Reports to the Drinking Water Program
ET <sub>o</sub>	Evapotranspiration Rate
Ft	Feet
FID	Fresno Irrigation District
GAL	Gallons
GPCPD,	Gallons per Capita per Day
GPM	Gallons per Minute
GHG	Greenhouse Gas
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCD	California Department of Housing and Community Development
HE	High-Efficiency
CCF	Hundred Cubic Feet
in	Inch
in/month	Inch per Month
ITP	Independent Technical Panel
IRWMP	Integrated Regional Water Management Plan

JPA	Joint Powers Agreement
KRCD	Kings River Conservation District
MCL	Maximum Contaminant Level
MG	Million Gallons
mgd	Million Gallons per Day
mg/L	Milligrams per liter
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MFR	Multiple Family Residential
PWS	Public Water System
SB	Senate Bill
SFR	Single Family Residential
SOI	Sphere of Influence
SWRCB	State Water Resources Control Board
SGMA	Sustainable Groundwater Management Act
µg/L	Microgram per liter
UWMP	Urban Water Management Plan
UWMPA	Urban Water Management Plan Act
WSCP	Water Shortage Contingency Plan

## CHAPTER 1 INTRODUCTION AND OVERVIEW

### 1.1. Background and Purpose

The California Water Code requires all urban water suppliers within the state to prepare and adopt Urban Water Management Plans (UWMP) for submission to the California Department of Water Resources (DWR). The UWMPs must be updated every five years and satisfy the requirements of the Urban Water Management Planning Act of 1983 including amendments that have been made to the Act. The UWMPA requires urban water suppliers servicing 3,000 or more connections, or supplying more than 3,000 acre-feet (AF) of water annually, to prepare an UWMP.

The purpose of the UWMP is to maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during water drought conditions. This report, which was prepared in compliance with the California Water Code, and as set forth in the guidelines and format established by the DWR, is the City of Kerman's (City) 2015 UWMP.

### 1.2. Urban Water Management Planning and the California Water Code

Water planning is an essential function of water suppliers, but is critical as California grapples with ongoing drought and expected long-term climate changes. Prior to the adoption of the Urban Water Management Planning Act (UWMPA), there were no specific requirements that water agencies conduct long-term resource planning. While many water agencies had conducted long-term water supply and resource planning prior to the Act, those who had not were left vulnerable to supply disruptions during dry periods or catastrophic events.

#### 1.2.1. Urban Water Management Planning Act of 1983

In 1983, State Assembly Bill (AB) 797 modified the California Water Code Division 6, by creating the UWMPA. Several amendments to the original UWMPA, which were introduced since 1983, have increased the data requirements and planning elements to be included in this 2015 UWMP.

Initial amendments to the UWMPA required that total projected water use be compared to water supply sources over the next 20 years, in 5-year increments. Recent DWR guidelines also suggest projecting through a 25-year planning horizon to maintain a 20-year timeframe until the next UWMP update has been completed and for use in developing Water Supply Assessments.

Other amendments require that UWMPs include provisions for recycled water use, demand management measures, and a water shortage contingency plan. Recycled water was added in the reporting requirements for water usage and figures prominently in the requirements for evaluation of alternative water supplies, when future projections predict the need for additional water supplies. Each urban water purveyor must coordinate the preparation of the water shortage contingency plan with other urban water

purveyors in the area, to the extent practicable. Each water supplier must also describe their water demand management measures that are being implemented, or scheduled for implementation.

In addition to the UWMPA and its amendments, there are several other regulations that are related to the content of the UWMP. In summary, the key relevant regulations are:

- ❖ AB 1420: Requires implementation of demand management measures (DMMs)/best management practices (BMPs) and meeting the 20 percent reduction by 2020 targets (mandated by SBx7-7) to qualify for water management grants or loans.
- ❖ AB 1465: Requires water suppliers to describe opportunities related to recycled water use and stormwater recapture to offset potable water use.
- ❖ Amendments Senate Bill (SB) 610 (Costa, 2001), and SB 221 (Daucher, 2001), which became effective beginning January 1, 2002, require counties and cities to consider information relating to the availability of water to supply new large developments by mandating the preparation of further water supply planning (Daucher) and Water Supply Assessments (Costa).
- ❖ SB 1087: Requires water suppliers to report single family residential (SFR) and multifamily residential (MFR) projected water use for planned lower income units separately.
- ❖ Amendment SB 318 (Alpert, 2004) requires the UWMP to describe the opportunities for development of desalinated water, including but not limited to, ocean water, brackish water, and groundwater, as long-term supply.
- ❖ AB 105 (Wiggins, 2004) requires urban water suppliers to submit their UWMPs to the California State Library.
- ❖ SBx7-7: Requires development and use of new methodologies for reporting population growth estimates, base per capita use, and water conservation. This water bill also extended the 2010 UWMP adoption deadline for retail agencies to July 1, 2011.

The UWMPA is included for reference in Appendix A.

### **1.2.2. Applicable changes to the Water Code since 2010**

Table 1-1 provides a summary of the changes to the California Water Code (CWC) since 2010:

<b>Table 1-1 Changes to the CWC since 2010</b>			
<b>Topic</b>	<b>CWC Section</b>	<b>Legislative Bill</b>	<b>Summary</b>
Demand Management Measures	10631 (f)(1) and (2)	AB 2067 Weber 2014	Requires water suppliers to provide narratives describing their water demand management measures, as provided. Requires retail water suppliers to address the nature and extent of each water demand management measure implemented over the past 5 years and describe the water demand

**Table 1-1 Changes to the CWC since 2010**

Topic	CWC Section	Legislative Bill	Summary
			management measures that the supplier plans to implement to achieve its water use targets.
Submittal Date	10621 (d)	AB 2067 Weber 2014	Requires each urban water supplier to submit its 2015 plan to the Department of Water Resources by July 1, 2016.
Submittal Format	10644 (a) (2)	SB 1420 Wolk 2014	Requires the plan, or amendments to the plan, to be submitted electronically to the department.
Standardized Forms	10644 (a) (2)	SB 1420 Wolk 2014	Requires the plan, or amendments to the plan, to include any standardized forms, tables, or displays specified by the department.
Water Loss	10631 (e) (1) (J) and (e) (3) (A) and (B)	SB 1420 Wolk 2014	Requires a plan to quantify and report on distribution system water loss.

### **1.2.3. Water Conservation Act of 2009 (SB X7-7)**

The Water Conservation Act of 2009 required retail urban water suppliers to report in their UWMPs their Base Daily Per capita Water Use (Baseline GPCPD), 2015 Interim Urban Water Use Target, 2020 Urban Water Use Target, and Compliance Daily per Capita Water Use. These terms are defined in Methodologies for Calculating Baseline and Compliance Urban per Capita Water Use, DWR 2011 (Methodologies) consistent with SB X7-7 requirements.

Beginning in 2016, retail water suppliers are required to comply with the water conservation requirements in SB X7-7 in order to be eligible for State water grants or loans. The complete text of the Water Conservation Act is in Appendix B. Retail water agencies are required to set targets and track progress toward decreasing daily per capita urban water use in their service area, which will assist the State in meeting its 20 percent reduction goal by 2020.

## **1.3. Urban Water Management Plan in Relation to Other Planning Efforts**

Urban suppliers provide information on water management specific to their service areas. However, water management does not happen in isolation; there are other planning processes that integrate with the UWMP to accomplish urban planning. Some of these plans include city and county General Plans,

Water Master Plans, Recycled Water Master Plans, integrated resource plans, Integrated Regional Water Management Plans, Groundwater Management Plans, and others.

This 2015 UWMP relies on planning documents prepared by the City of Kerman, the City's 2007-2027 General Plan and the Fresno County Multi-Jurisdictional 2015-2023 Housing Element.

## **1.4. UWMP Organization**

This 2015 UWMP has been organized following the DWR's recommended outline. The following is a description of the Chapters and a brief description of the content in each Chapter:

- ❖ **Chapter 1 - Introduction and Overview:** This introductory chapter provides a discussion on the importance and extent of the City's water management planning efforts.
- ❖ **Chapter 2 - Plan Preparation:** This chapter provides information on the process followed for developing the UWMP, including efforts in coordination and outreach.
- ❖ **Chapter 3 - System Description:** This chapter includes maps of the service area, a description of the service area and climate, the Public Water System, and the City's organizational structure and history.
- ❖ **Chapter 4 - System Water Use:** This chapter describes and quantifies the current and projected water uses within the City's service area.
- ❖ **Chapter 5 - Baselines and Targets:** This chapter describes the method used for calculating the baseline and target water consumption. This chapter also demonstrates that the City has achieved the 2015 interim water use target, and the City's plans for achieving the 2020 water use target.
- ❖ **Chapter 6 - System Supplies:** This chapter describes and quantifies the current and projected sources of water available to the agency. This chapter also includes a description and quantification of potential recycled water uses and supply availability.
- ❖ **Chapter 7 - Water Supply Reliability:** This chapter describes the reliability of the City's water supply and project the reliability out 20 years. This description is provided for normal, single dry years and multiple dry years.
- ❖ **Chapter 8 - Water Shortage Contingency Planning:** This chapter provides the City's staged plan for dealing with water shortages, including a catastrophic supply interruption.
- ❖ **Chapter 9 - Demand Management Measures:** This chapter communicates the City's efforts to promote conservation and to reduce demand and specifically addresses several demand management measures.
- ❖ **Chapter 10 - Plan Adoption, Submittal, and Implementation:** This chapter describes the steps taken to adopt and submit the UWMP and to make it publicly available. This chapter also includes a discussion of the City's plan to implement the UWMP.

## CHAPTER 2 PLAN PREPARATION

### 2.1. Introduction

This chapter provides the basis for preparing the 2015 UWMP and describes the various levels of regional coordination that the City has employed. It also describes the reporting period and the units of measure used by the City to report water volumes throughout the 2015 UWMP.

Finally, this chapter also provides a description of the coordination and outreach efforts followed in the preparation of the 2015 UWMP. Coordination and outreach are key elements to developing a useful and accurate UWMP.

### 2.2. Basis for Preparing a Plan

#### *CWC 10617*

*“Urban water supplier” means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems...*

#### *CWC 10620 (b)*

*Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.*

#### *CWC 10621*

- (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero, except as provided in section (d).*
- (d) Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.*

According to the Department of Finance, in 2015 the City of Kerman provided water for municipal purposes to an population of approximately 14,284. Currently, water is supplied to City residents through 3,479 active service connections. Thus, the City is classified as an “urban water supplier” as defined by Section 10617 of the CWC. In accordance with the CWC, as an urban water supplier the City is required to update its urban water management plan every five years. In 2012, the City submitted their 2010 UWMP to the Department of Water Resources (DWR). The City has prepared this update to the 2010 UWMP to ensure the efficient use of available water supplies, determine existing baseline water consumption, establish water use targets, 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 the UWMP Act.

## 2.2.1. Public Water Systems

*CWC 10644*

*(a)(2) The plan, or amendments to the plan, submitted to the department ... shall include any standardized forms, tables, or displays specified by the department.*

*CWC 10608.52*

*(a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.*

*(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24... The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.*

*California Health and Safety Code 116275 (h)*

*“Public Water System” means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.*

The City of Kerman is a public water system (PWS#1010018) and is regulated by the State Water Resources Control Board, Division of Drinking Water (SWRCB-DDW). The SWRCB-DDW requires reporting on public water systems.

The City files electronic Annual Reports to the Drinking Water Program (eARDWP) to the Board, which include annual reports of water usage and other information. The information provided in this UWMP is consistent with the data reported in the eARDWP.

## 2.2.2. Agencies Serving Multiple Service Areas/Public Water Systems

The City of Kerman serves only one PWS. Information about that PWS is shown below in Table 2-1.

**Table 2-1 Retail Only: Public Water Systems (Standard Table 2-1)**

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied in 2015 (MG)
CA1010018	City of Kerman	3,479	898

## 2.3. Individual or Regional Planning and Compliance

Before developing this 2015 UWMP, the City considered becoming involved in regional planning processes. While regional reporting is an option in the future, the City of Kerman has chosen Individual Reporting for the 2015 UWMP.

The City is a member of the Fresno Area Regional Groundwater Management Group (FARGMP) and the Kings Integrated Regional Water Management Plan (IRWMP). As a member of these groups, the City anticipates a much greater coordination with all water suppliers and users in the near future.

The City has developed this 2015 UWMP covering only its agency service area and addressing all requirements of the Water Code. Table 2-2 shows that the City has developed an individual UWMP.

Table 2-2 Plan Identification (Standard Table 2-2)	
<input checked="" type="checkbox"/>	Individual UWMP
<input type="checkbox"/>	Regional UWMP (RUWMP)

## 2.4. Fiscal or Calendar Year and Units of Measure

*CWC 1608.20*

*(a)(1) Urban retail water suppliers...may determine the targets on a fiscal year or calendar year basis.*

### 2.4.1. Fiscal or Calendar Year

Water suppliers may report on either a fiscal or calendar year basis. DWR prefers that agencies report on a calendar year basis in order to ensure UWMP data is consistent with data submitted to other reports to the State.

The City of Kerman is reporting on a calendar year basis. All data included in this 2015 UWMP is consistent with the calendar year basis.

### 2.4.2. Reporting Complete 2015 Data

The 2015 UWMPs are required to include the water use and planning data for the entire calendar year of 2015, if an agency is reporting on a calendar year basis. This 2015 UWMP contains information for the entire year of 2015.

### 2.4.3. Units of Measure

Water agencies use various units of measure when reporting water volumes, such as acre-feet (AF), million gallons (MG), or hundred cubic feet (CCF). Agencies may report volumes of water in any of these units, but must maintain consistency throughout the UWMP.

The City of Kerman reports water volumes in million gallons (MG). For consistency, this 2015 UWMP also uses MG as the reporting units. Table 2-3 shows the type of agency, type of reporting year, and the units of measurement used throughout the 2015 UWMP.

Table 2-3 Agency Identification (Standard Table 2-3)	
Type of Agency	
<input type="checkbox"/>	Agency is a wholesaler
<input checked="" type="checkbox"/>	Agency is a retailer
Fiscal or Calendar Year	
<input checked="" type="checkbox"/>	UWMP Tables Are in Calendar Years
<input type="checkbox"/>	UWMP Tables Are in Fiscal Years
Units of Measure Used in UWMP	
Unit	Million Gallons (MG)
NOTES:	

## 2.5. Coordination and Outreach

CWC 10631

*(j) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).*

### 2.5.1. Wholesale and Retail Coordination

When a water supplier relies upon a wholesale agency for a water supply, both suppliers are required to provide each other with information regarding projected water supply and demand. The projections should be consistent with each agency's supply and demand projections.

The City of Kerman does not receive water from any wholesale agency. Table 2-4 is included below to indicate that the information requested does not apply to the City of Kerman.

**Table 2-4 Water Supplier Information Exchange (Standard Table 2-4)**

The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name
Not Applicable
NOTES:

## 2.5.2. Coordination with Other Agencies and the Community

*CWC 10620*

*(d)(2) Each urban water supplier shall 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.*

*CWC 10642*

*Each urban water supplier shall encourage the 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...*

In the preparation of this 2015 UWMP the City has coordinated with other appropriate agencies in the area, to the extent practicable. The following is a list of agencies and organizations that the City has contacted in the preparation of this 2015 UWMP:

- ❖ County of Fresno
- ❖ North Kings Groundwater Sustainability Agency
- ❖ Kings Basin Water Authority
- ❖ Fresno Irrigation District
- ❖ General Public

Copies of the letters sent to each of those agencies are included in Appendix C.

## 2.5.3. Notice to Cities and Counties

*CWC 10621 (b)*

*Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.*

Agencies must notify cities and counties within which they serve water that the UWMP is being updated and reviewed. Since all water supplied by the City of Kerman is within city boundaries, no additional cities were notified of the 2015 UWMP or invited to participate in the process.

The City provided formal written notice to the County of Fresno that the City's UWMP was being updated. In accordance with the UWMPA, this notification was provided at least 60 days prior to the public hearing of the Plan. Appendix C contains copies of the outreach documents.

## CHAPTER 3 SYSTEM DESCRIPTION

### 3.1. General Description

*CWC Section 10631 (a)*

*Describe the service area of the supplier...*

The City of Kerman is located on the west side Fresno County, in the southern portion of the San Joaquin Valley. The City is a public agency that provides water and sewer service to residential, commercial, and industrial customers and for fire protection uses. Covering approximately 3.3 square miles, the City serves a current population (2015) of 14,284 through approximately 3,479 active service connections.

Kerman is situated approximately 15 miles west of the City of Fresno and 17 miles south of the City of Madera. The smaller cities of San Joaquin and Mendota are approximately 13 miles southwest and 20 miles west, respectively. The City is bisected by State Route 145 (Madera Ave), which runs north/south, and State Route 180 (Whitesbridge Road), which runs east/west.

According to the US Census, there were 8,548 people living in Kerman in 2000, and 13,544 in 2010. These population estimates represent an annual growth rate of 4.7 percent from 2000 to 2010. This increase in population is primarily a reflection of the regional growth pressures that are affecting the Central Valley as people living in more expensive regions look for affordable housing in the Valley.

The City of Kerman is the governing agency and the sole purveyor of water within City limits. The City adopted the 20-year General Plan in 2007. The General Plan is required to be reviewed and updated every five years to ensure that it reflects changes in community attitudes and market forces. The General Plan assesses delineated land use areas referred to as the Sphere of Influence (SOI), which is larger than the proposed City limits. The SOI includes land over which the City does not have complete jurisdiction; however, the City has the option to annex the land and develop it in the future.

The City's SOI encompasses approximately 4.8 square miles (3,098 acres) and is recognized as the ultimate growth boundary over the life of the City. Land uses within the City include residential (high, medium, low and very low density), commercial (general, neighborhood, regional and service), industrial, public right-of ways, public, quasi-public, mixed use, office, parks, ponding basins, schools and undesignated. Table 3-1 provides the total land use acreages currently within the City limits and SOI.

Table 3-1 Planning Area Land Use		
Land Use	City Limits	SOI
High Density Residential	89	89
Medium Density Residential	678	880
Low Density Residential	9	9
Very Low Density Residential	22	22
General Commercial	78	166
Neighborhood Commercial	10	10

Table 3-1 Planning Area Land Use		
Land Use	City Limits	SOI
Regional Commercial	69	69
Service Commercial	68	224
Industrial	316	686
Public Right-of-Way	419	448
Public	117	117
Quasi-Public	13	13
Mixed Use	13	13
Office	9	9
Parks	52	52
Ponding Basins	30	40
Schools	105	108
Undesignated	-	143
<b>Total Acreage</b>	<b>2,096</b>	<b>3,098</b>

### 3.2. Service Area Maps

A Service Area Map is included in Appendix D of this 2015 UWMP. The service area map contains the City Limits and the potable water service area boundary.

### 3.3. Service Area Climate

*CWC Section 10631 (a)*

*Describe the service area of the supplier, including... climate...*

The climate in the City of Kerman is characterized as a Central Valley desert climate. Summers are typically hot and dry with average monthly highs near 100° F, while winters are mild, humid and slightly wetter with average monthly lows near 35° F. Nearly nine-tenths of the annual precipitation falls during the period of November through April. Rainfall during the summer is rare and very light. Kerman enjoys a very high percentage of sunshine, receiving more than 80 percent of the possible amount during all but the four months of November, December, January, and February. Reduction of sunshine during these months is caused by fog and short periods of stormy weather.

Due to clear skies during the summer and the protection of the San Joaquin Valley from marine effects, the normal daily maximum temperature can reach over 100° F during the latter part of July. Winters are usually mild with infrequent cold spells; however, temperatures can drop below 20° F during the winter months.

The evapotranspiration rate ( $ET_o$ ), which is an indicator of how much water is required to maintain healthy agriculture and landscaping, ranges from 0.9 to 8.4 inches per month (in/month) and averages 4.8 inches

(in) per month, with highest  $ET_o$  occurring during the months of May through September. Table 3-2 summarizes the temperature, precipitation, and  $ET_o$  averages for the service area.

<b>Table 3-2 Climate Data</b>				
Month	Avg. Precipitation (in) <sup>(1)</sup>	Avg. Max Temp (°F) <sup>(1)</sup>	Avg. Min Temp (°F) <sup>(1)</sup>	Monthly Eto (in) <sup>(2)</sup>
January	2.09	54.6	37.6	0.9
February	1.90	61.5	40.7	1.5
March	1.89	67.0	43.8	3.2
April	1.03	74.4	48.0	4.8
May	0.36	83.5	54.3	6.6
June	0.16	91.7	60.5	7.7
July	0.01	98.3	65.7	8.4
August	0.01	96.4	64.0	7.2
September	0.15	90.8	59.7	5.3
October	0.53	79.7	51.2	3.4
November	1.13	65.3	42.4	1.4
December	1.64	54.7	37.3	0.7
<b>Annual Total/Average</b>	<b>10.90</b>	<b>76.5</b>	<b>50.4</b>	<b>4.3</b>

NOTE:

<sup>(1)</sup> From Western Regional Climate Center Fresno Yosemite International Airport, CA (043257).

<sup>(2)</sup> From Department of Water Resources Model Water Efficient Landscape Ordinance.

### 3.4. Service Area Population

*CWC Section 10631 (a)*

*Describe the service area of the supplier, including current and projected population . . . The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.*

Kerman has historically experienced steady population growth and future projections anticipate further growth. The persistent increase in population is primarily a reflection of the regional growth pressures that are affecting the Central Valley as people living in more expensive regions look for affordable housing in the Valley. Anticipating increased demand from population growth and new enterprise are important aspects of the City's UWMP. The City's UWMP anticipates the effects of increased demand on water resources arising from sustained population growth.

The 2010 U.S. Census Bureau population estimate for the City of Kerman was 13,544, up from 8,548 at the 2000 U.S. Census, and up from 5,381 the 1990 Census. According to the Department of Finance, the

City served a total population of approximately 14,284 in 2015. Based on these population figures, the average annual growth rate since 1990 has been approximately 4.15 percent. Over the past 10 years, the City has experienced an average annual population growth rate of 2.69 percent. Table 3-3 contains the projected population for the next twenty-five years, in 5-year increments, assuming a 2.69 percent annual average growth rate through 2040.

<b>Table 3-3 Population - Current and Projected</b>						
Population Served	2015	2020	2025	2030	2035	2040
	14,284	16,314	18,633	21,281	24,306	27,761

## CHAPTER 4 SYSTEM WATER USE

### 4.1. Introduction

This chapter provides a description and quantifies the City's current water use and water use projections through the year 2040. The data provided in this Section allows the City to accurately analyze the use of the City's water resources and conduct good resource planning. The future demand estimates allow the City to manage the water supply and appropriately plan their infrastructure investments. The terms "water use" and "water demand" will be used interchangeably.

### 4.2. Recycled versus Potable and Raw Water Demand

The City's water supply is exclusively groundwater. Currently, the City only provides recycled water to agricultural customers for the irrigation of non-edible crops. However, the City anticipates that the total volume of recycled water dedicated to this use will decrease as the current irrigated property will be developed for other uses over time and will no longer be irrigated with the City's recycled water. Also, fewer farmers in area are irrigating crops that are not compatible with the City's effluent

Tables 4-2, 4-4, and 4-5 contain the City's current and projected potable water demands.

### 4.3. Water Use by Sector

*CWC 10631(e)*

*(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:*

*(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, or conjunctive use, or any combination thereof.*

*(I) Agricultural.*

*(2) The water use projections shall be in the same five-year increments described in subdivision (a).*

This 2015 UWMP includes past, current, and projected water use in five-year increments. The City will determine the reliability of their projected water supply based upon that information. This 2015 UWMP also identifies the water use by sector. The City breaks down metered and unmetered water deliveries into single family residential (SFR), multi-family residential (MFR), commercial, institutional/governmental, industrial, landscape, and outside City limits. The number of water service accounts and volume of water served provides insight into different customers' water use, which can be useful in defining effective water conservation measures.

In 2015, approximately 38 percent of the accounts the City delivered water to remained unmetered and consisted of residential, commercial and institutional/governmental customers. The City began a meter installation program in 2010 to ensure that all user connections will be metered by 2020 and will also implement usage based water bill for all accounts. Commercial and City accounts are also expected to be completely metered within that same time frame. All industrial, landscape, and outside City limits accounts are currently metered. Table 4-1 summarizes the number of metered and unmetered accounts in the City in 2015.

**Table 4-1 Total Number of User Accounts in 2015**

Use Type	Un-metered Connections	Metered Connections	Total
Single Family	1,167	1,805	2,972
Multi-Family	70	125	195
Commercial	66	142	208
Institutional/Governmental	4	16	20
Industrial	-	8	8
Landscape <sup>(1)</sup>	-	62	62
Outside City Limits <sup>(2)</sup>	-	14	14
<b>Total</b>	<b>1,307</b>	<b>2,172</b>	<b>3,479</b>

**NOTES:**

<sup>(1)</sup> Includes landscape and City median service connections.

<sup>(2)</sup> All connections outside City Limits are residential.

Overall water use for the City's accounts can only be estimated because approximately 1,307 of the City's connections remain unmetered. Water usage estimates for unmetered accounts were based on 2015 metered data and the 2015 water usage of each sector. To estimate the distribution of water use by use type, it has been assumed that unmetered residential, commercial and City customers consumed approximately 15 percent more water than metered customers. Estimated unmetered demand and measured metered water use for each user type is shown in Table 4-2, where City accounts are shown as institutional/governmental.

**Table 4-2 Demands for Potable and Raw Water – Actual (Standard Table 4-1)**

Use Type	2015 Actual				
	Additional Description	Metered Deliveries	Unmetered Deliveries <sup>(1)</sup>	Level of Treatment When Delivered	Total Volume
Single Family	2,972 Connections	277	206	Drinking Water	483
Multi-Family	195 Connections	54	35	Drinking Water	89
Commercial	208 Connections	30	16	Drinking Water	46
Institutional/Governmental	20 Connections	39	1	Drinking Water	40
Industrial	8 Connections	9	-	Drinking Water	9
Landscape	62 Connections	95	-	Drinking Water	95
Outside City Limits	14 Connections	1	-	Drinking Water	1
Losses <sup>(2)</sup>	Un Accounted Water	-	-	Drinking Water	135
				<b>TOTAL</b>	<b>898</b>

**NOTES:**

<sup>(1)</sup> Based on the number of unmetered connection for each use type and average monthly volume of water used by metered customers. It has been assumed that unmetered connections consume approximately 15% more water than metered connections.

<sup>(2)</sup> For projection purposes, losses or un-accounted water represent the volume of water that is produced and distributed, but not sold or metered to customers.

Table 4-3 lists the projected number of accounts by user type. The number of accounts where projected using the total metered and unmetered accounts and a 2.69 percent growth rate consistent with population growth observed over the past decade.

**Table 4-3 Projected Number of Total Connections by User Type**

Use Type	2015	2020	2025	2030	2035	2040
Single Family	2,972	3,394	3,876	4,426	5,054	5,771
Multi-Family	195	223	254	290	332	379
Commercial	208	238	271	310	354	404
Institutional	20	23	26	30	34	39
Industrial/Governmental	8	9	10	12	14	16
Landscape	62	71	81	92	105	120
Outside City Limits	14	16	18	21	24	27
<b>TOTAL</b>	<b>3,479</b>	<b>3,973</b>	<b>4,537</b>	<b>5,181</b>	<b>5,916</b>	<b>6,756</b>

Table 4-4 lists the projected water demands through the year 2040. The projected water demands were obtained by multiplying the number of projected accounts by the user's average annual consumption.

**Table 4-4 Demands for Potable and Raw Water – Projected (Standard Table 4-2)**

Use Type	Projected Water Use				
	2020	2025	2030	2035	2040
Single Family	552	630	720	822	938
Multi-Family	101	115	132	151	172
Commercial	53	60	69	79	90
Institutional	46	52	60	68	78
Industrial	11	12	14	16	18
Landscape	108	124	141	161	184
Other (Outside City Limits)	1	1	2	2	2
Losses	154	176	200	229	261
<b>TOTAL</b>	<b>1,025</b>	<b>1,171</b>	<b>1,337</b>	<b>1,527</b>	<b>1,744</b>

Table 4-5 lists provide a summary of the City's potable water demand projections. Recycled water is not included in the City's potable water demand and the City does not have any plans to use recycled water as a potable source in the foreseeable future.

**Table 4-5 Total Water Demands (Standard Table 4-3)**

	2015	2020	2025	2030	2035	2040
Potable and Raw Water	898	1,025	1,171	1,337	1,527	1,744
Recycled Water Demand	0	0	0	0	0	0
<b>TOTAL WATER DEMAND</b>	<b>898</b>	<b>1,025</b>	<b>1,171</b>	<b>1,337</b>	<b>1,527</b>	<b>1,744</b>

#### 4.4. Distribution System Losses

*CWC 10631(e)(1) and (2)*

*Quantify, to the extent records are available, past and current water use over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:*(J) Distribution system water loss

*CWC 10631 (e)(3)*

*(A) For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.*

*(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.*

Water distribution system losses is a crucial part of water demand management. Distribution system loss or unaccounted water is the volume of water that is produced and distributed but not sold or metered to customers. For the City of Kerman, leakage is most likely the largest component of distribution loss. In addition to leakage, the following are other sources of water loss:

- ❖ Slow meters
- ❖ Failed meters
- ❖ Theft
- ❖ Fire Protection
- ❖ Unmetered construction water used for flushing pipelines and dust control
- ❖ Service leaks prior to meter connection flushing
- ❖ Unmetered water used for flushing dead ends within the system to maintain water quality
- ❖ Well development

Table 4-6 contains the 12-month water loss audit over the past year.

Table 4-6 12 Month Water Loss Audit Reporting (Standardized Table 4-4)	
Reporting Period Start Date	Volume of Water Loss
01/2015	135

The estimated unaccounted for water was equal to approximately 15 percent of the total water produced in 2015. The majority of the unaccounted for water is mostly likely attributed to higher water use by unmetered accounts than estimated. In addition, unaccounted for, unmetered, public landscape areas also likely contribute to this volume of water. It is projected that all customers within the City's service area will be metered and billed on a usage based rate by January 1<sup>st</sup>, 2020.

## 4.5. Future Water Savings

*CWC 10631 (e)(4)*

*(A) If available and applicable to an urban water supplier, water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.*

*(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following: (i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections. (ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.*

The water use projections are calculated using 2015 consumption data as the baseline. The 2015 consumption is considered to include a lot of the water conservation measures that the City has implemented due to the drought conditions. Additional water savings will be realized in the future by

converting all flat-rate and unmetered customers to metered supplies and reducing leaks in the system. However, those future water savings have not been included in water use projections. The City adopted a water conservation ordinance that amends the City's municipal code adding a section on water conservation. It is still unclear how much savings the new ordinance will deliver in future years.

## 4.6. Water Use for Lower Income Households

### *CWC 10631.1(a)*

*The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.*

### *California Health and Safety Code 50079.5 (a)*

*"Lower income households" means persons and families whose income does not exceed the qualifying limits for lower income families... In the event the federal standards are discontinued, the department shall, by regulation, establish income limits for lower income households for all geographic areas of the state at 80 percent of area median income, adjusted for family size and revised annually.*

Urban water suppliers are required to identify water demand required for lower income housing in its water use projections. State legislation (SB 1087 and Government Code §65589.7), effective January 1, 2006, specifies that local water agencies and sewer districts must grant priority for service hook-ups to projects that help meet the community's fair housing need. Kerman's share of regional housing needs originates with the California Department of Housing and Community Development (HCD). HCD first estimates a statewide need for housing, which is broken down into regions, each of which then has an assigned share of estimated housing needs. The Fresno County Council of Governments (Fresno COG) is the local agency mandated by California Government Code §65554(a) to distribute the "Fair Share Allocation" of the regional housing need to each jurisdiction in Fresno County. The "Fair Share Allocation" of housing is a specific number of residential units, in different price ranges, assigned to each local jurisdiction, including the City of Kerman.

The Fresno COG's 2016 Multi-Jurisdictional Housing Element estimates that a total of 41,470 housing units will be needed in the County through the end of year 2023. The City of Kerman's share of those units is 909 or approximately 2.2 percent. The 2016 Multi-Jurisdictional Housing Element also estimates that approximately 49.4 percent of the total housing needs in the City of Kerman are for low income households. The needs allocation is further classified as low income, very low income and extremely low income. The extremely low income families require rental assistance and these units are assumed to be multi-family residential (MFR) units. The low income and very low income are assumed to be single-family residential (SFR) units.

Based on the projected low income housing residential unit needs, Table 4-7 lists the projected number of housing units through 2040.

**Table 4-7 Projected Number of Additional Low Income Housing Units**

Use Type	Income <sup>(1)</sup>	FCOG Allocation	2015-20	2020-25	2025-30	2030-35	2035-40
Extremely Low Income	<30%	13.1%	4	4	5	5	6
Very Low Income	31%-50%	13.1%	55	63	72	82	94
Low Income	51%-80%	23.2%	98	112	128	146	167
Moderate Income	81%-120%	22.2%	94	107	122	140	159
Above Moderate Income	>120%	28.4%	120	137	156	178	204
	<b>TOTAL</b>	<b>100.0%</b>	<b>370</b>	<b>423</b>	<b>483</b>	<b>551</b>	<b>630</b>

NOTES: <sup>(1)</sup> As a percentage of the County's Median Household Income

The estimated volume of water needed to meet the new lower income housing units are shown in Table 4-8. The projected water needed for additional low income units was estimated by first dividing the gross volume of water delivered to either multi-family or single family residence by total number of metered connections for each use type, and then multiplied by the projected number of additional housing units determined in Table 4-7.

**Table 4-8 Projected Water Use Needed for Additional Low Income Housing Units**

Use Type	2015-20	2020-25	2025-30	2030-35	2035-40
Extremely Low Income	2	2	2	2	3
Very Low Income	9	10	12	13	15
Low Income	16	18	21	24	27
<b>TOTAL</b>	<b>27</b>	<b>30</b>	<b>35</b>	<b>40</b>	<b>45</b>

The projected water demands for lower income housing are included in the projections of water demands shown in Tables 4-4 and 4-5. Demand for existing lower income housing is being met and is included in the volumes shown in Tables 4-4 and 4-5.

**Table 4-9 Inclusion in Water Use Projections (Standard Table 4-5)**

Are Future Water Savings Included in Projections?	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc... utilized in demand projections are found.	
Are Lower Income Residential Demands Included In Projections?	Yes

## 4.7. Climate Change

DWR Guidelines recommend that the 2015 UWMP include a discussion of potential climate change impacts on projected demand. The City of Kerman is part of the Upper Kings Integrated Regional Water Management Plan (IRWMP). Appendix E contains the climate change assessment found in Chapter 17 of the Upper Kings IRWMP.

There is mounting scientific evidence that global climate conditions are changing and will continue to change as a result of the continued build-up of greenhouse gases (GHGs) in the Earth's atmosphere. Changes in climate can affect municipal water supplies through modifications in the timing, amount, and form of precipitation, as well as water demands and the quality of surface runoff. These changes can affect

all elements of water supply systems, from watersheds to reservoirs, conveyance systems, and treatment plants.

Indications of climate change have been observed over the last several decades throughout California. Statewide average temperatures have increased by about 1.7°F from 1895 to 2011, with the greatest warming in the Sierra Nevada. Although the State's weather has followed the expected pattern of a largely Mediterranean climate throughout the past century, no consistent trend in the overall amount of precipitation has been detected, except that a larger proportion of total precipitation is falling as rain instead of snow.

The correlation between temperature and water demand is well documented and understood. A large percentage of the City's water demand is driven by outdoor irrigation. Higher temperatures will increase evapotranspiration rates and increase demands. Higher temperatures will also extend the duration of the outdoor landscaping growing season increasing the maximum day demands on the spring and fall seasons.

It is evident that climate change adds new uncertainties to the challenges of planning. Changes in weather could significantly affect water supply planning. Since climatic pressures could potentially affect supply reliability, continual attention to this issue will be necessary in the future. A copy of the Kings Basin Water Authority IRWMP Climate Change Vulnerability Assessment is included in Appendix E.

## CHAPTER 5 BASELINES AND TARGETS

### 5.1. Introduction

With the adoption of the Water Conservation Act of 2009, also known as the SB X7-7, (see Appendix B), the State is required to set a goal of reducing urban water use by 20 percent by the year 2020. Each retail urban water supplier must determine baseline water use during their baseline period and also target water use for the years 2015 and 2020 in order to help the State achieve the 20 percent reduction.

In the 2015 UWMP, water agencies must demonstrate compliance with their established water use target for the year 2015. This also demonstrates whether or not the agency is currently on track to achieve its 2020 target. Compliance is verified by DWR's review of the SB X7-7 Verification Form included in Appendix F of this 2015 UWMP.

### 5.2. Updating Calculations from 2010 UWMP

*CWC 10608.20 (g)*

*An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).*

*Methodologies DWR 2010, Methodology 2 Service Area Population*

*Page 27 - Water suppliers may revise population estimates for baseline years between 2000 and 2010 when 2010 census information becomes available. DWR will examine discrepancy between the actual population estimate and DOF's projections for 2010; if significant discrepancies are discovered, DWR may require some or all suppliers to update their baseline population estimates.*

The City of Kerman is considered an Urban Water Supplier and filed a 2010 UWMP in 2012. This 2015 UWMP contains undated calculations about water use targets and population estimates.

#### 5.2.1. Target Method

*CWC 10608.20 (b)*

*An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):*

*(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.*

*(2) The per capita daily water use that is estimated using the sum of the following performance standards:*

*(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.*

*(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.*

*(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.*

*(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.*

*(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:*

*(A) Consider climatic differences within the state.*

*(B) Consider population density differences within the state.*

*(C) Provide flexibility to communities and regions in meeting the targets.*

*(D) Consider different levels of per capita water use according to plant water needs in different regions.*

*(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.*

*(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.*

Target Method 1 has been selected by the City as the preferred compliance method to determine water use targets. Target Method 1 is calculated as a 20% reduction of the baseline daily water use.

### **5.2.2. SBX7-7 Verification Form**

To satisfy the provisions of SB X7-7, the City must establish a per capita water use target for the year 2020 as well as an interim target. DWR has provided guidelines for determining these targets in its Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use and also in the 2015 UWMP Guidebook. The City's baseline water use is based on the City's historic water use and is determined by procedures identified in the following sections.

All retail agencies, whether updating their baselines and targets from 2010, or calculating these for the first time in 2015 UWMPs, are required to submit the standardized tables in the SB X7-7 Verification Form with their 2015 UWMPs. These standardized tables were not available in 2010 and are required to demonstrate compliance with the Water Conservation Act of 2009.

The tables in the SB X7-7 Verification Form are distinguished from the other standardized tables in this 2015 UWMP by their name, which will state “SB X7-7”, followed by the table number.

### **5.3. Baseline Periods**

#### *CWC 10608.20*

*(e) An urban retail water supplier shall include in its urban water management plan due in 2010. . . the baseline daily per capita water use...along with the bases for determining those estimates, including references to supporting data.*

*(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).*

The City is responsible for determining both a 10 or 15-year baseline and a 5-year baseline in accordance with DWR’s guidelines.

#### **5.3.1. Determination of the 10-15 Year Baseline Period (Baseline)**

#### *CWC 10608.12*

*(b) "Base daily per capita water use" means any of the following:*

*(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*

*(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*

The City did not meet at least 10% of its 2008 measured retail water demand through recycled water. Therefore, the baseline must be calculated over a 10-year period. This 2015 UWMP uses the period between January 1<sup>st</sup>, 2001 and December 31<sup>st</sup>, 2010 as the baseline period.

### **5.3.2. Determination of the 5 Year Baseline (Target Confirmation)**

*CWC 10608.12 (b)*

*(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010*

The UWMPA requires urban water suppliers to calculate water use, in gallons per capita per day (GPCD), for a 5-year baseline period. The 5-year baseline period is used to confirm that the selected 2020 target meets the minimum water use reduction requirements in accordance with CWC 10608.22. The selected 5-year Baseline Period for the 2015 UWMP is January 1<sup>st</sup>, 2006 through December 31<sup>st</sup>, 2010.

### **5.4. Service Area Population**

*CWC 10608.20*

*(e) An urban retail water supplier shall include in its urban water management plan...the baseline daily per capita water use, along with the bases for determining those estimates, including references to supporting data.*

*(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.*

*CWC 10644 (a)(2)*

*The plan... shall include any standardized forms, tables, or displays specified by the department.*

To obtain an accurate estimate of the annual per capita consumption, the 2015 UWMP must estimate population of the area served. The population estimates must include each baseline year in both baseline periods and for the 2015 compliance year. The methods available for estimating the City's population are provided in Methodology 2 of the Methodologies document. The following is a description of the methodology used in this 2015 UWMP to estimate the City's population.

#### **5.4.1. Population Methodology**

Agencies whose service area boundaries correspond by 95 percent or more with the boundaries of a city during the baseline period and the compliance year 2015 will be able to obtain population estimates from tables prepared by the Department of Finance (DOF).

The City's service area boundaries correspond with the boundaries of the City during the baseline and compliance years. Department of Finance population tables have been used to estimate the service area population. The service area population for each of the baseline years is shown in Table 5-1.

<b>Table 5-1 Service Area Population (SB X7-7 Table 3)</b>		
<b>Year</b>	<b>Population</b>	
10 to 15 Year Baseline Population		
Year 1	2001	8,717
Year 2	2002	9,416
Year 3	2003	9,792
Year 4	2004	10,350
Year 5	2005	10,985
Year 6	2006	12,062
Year 7	2007	12,571
Year 8	2008	12,841
Year 9	2009	13,286
Year 10	2010	13,554
5 Year Baseline Population		
Year 1	2006	12,062
Year 2	2007	12,571
Year 3	2008	12,841
Year 4	2009	13,286
Year 5	2010	13,554
2015 Compliance Year Population		
	2015	14,284

## 5.5. Gross Water Use

*CWC 10608.12 (g)*

*“Gross Water Use” means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:*

- (1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier*
- (2) The net volume of water that the urban retail water supplier places into long term storage*
- (3) The volume of water the urban retail water supplier conveys for use by another urban water supplier*
- (4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.*

*California Code of Regulations Title 23 Division 2 Chapter 5.1 Article*

*Section 596 (a) An urban retail water supplier that has a substantial percentage of industrial water use in its service area is eligible to exclude the process water use of existing industrial water customers from the calculation of its gross water use to avoid a disproportionate burden on another customer sector*

Gross water use is a measure of water that enters the City's distribution system over a 12-month period with certain allowable exclusions. These exclusions are:

- Recycled water delivered within the service area
- Indirect recycled water
- Water placed into long term storage
- Water conveyed to another urban supplier
- Water delivered for agricultural use
- Process water

Gross water use is accurately measured at the point that water enters the distribution system. Measuring at this point ensures that all the water, including losses and other non-revenue water (i.e., firefighting, line flushing, etc...) is accounted for. Gross water use is calculated for each baseline year and the 2015 Compliance Year. Gross Water Use is shown in Table 5-2.

**Table 5-2 Annual Gross Water Use (SB X7-7 Table 4)**

	Baseline Year	Volume into Distribution System (MG)	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage	Indirect Recycled Water	Water Delivered for Agricultural Use	Process Water -	
<b>10 to 15 Year Baseline - Gross Water Use</b>								
Year 1	2001	787	0	0	0	0	0	787
Year 2	2002	917	0	0	0	0	0	917
Year 3	2003	942	0	0	0	0	0	942
Year 4	2004	987	0	0	0	0	0	987
Year 5	2005	991	0	0	0	0	0	991
Year 6	2006	1,019	0	0	0	0	0	1,019
Year 7	2007	1,265	0	0	0	0	0	1,265
Year 8	2008	1,273	0	0	0	0	0	1,273
Year 9	2009	1,200	0	0	0	0	0	1,200
Year 10	2010	1,079	0	0	0	0	0	1,079

**Table 5-2 Annual Gross Water Use (SB X7-7 Table 4)**

Baseline Year	Volume into Distribution System (MG)	Deductions					Annual Gross Water Use	
		Exported Water	Change in Dist. System Storage	Indirect Recycled Water	Water Delivered for Agricultural Use	Process Water -		
<b>10 - year baseline average gross water use</b>							<b>1,046</b>	
<b>5 Year Baseline - Gross Water Use</b>								
Year 1	2006	1,019	0	0	0	0	1,019	
Year 2	2007	1,265	0	0	0	0	1,265	
Year 3	2008	1,273	0	0	0	0	1,273	
Year 4	2009	1,200	0	0	0	0	1,200	
Year 5	2010	1,079	0	0	0	0	1,079	
<b>5-year baseline average gross water use</b>							<b>1,167</b>	
<b>2015 Compliance Year - Gross Water Use</b>								
<b>2015</b>		898	0	0	0	0	<b>898</b>	

## 5.6. Baseline Daily per Capita Water Use

The final step in baseline calculations is to determine the water used per person per day GPCD in each of the baseline years. This is done for each baseline year by dividing the gross water use by the service area population. Each baseline year is shown in Table 5-3.

**Table 5-3 Gallons Per Capita Per Day GPCD (SB X7-7 Table 5)**

Baseline Year	Service Area Population	Annual Gross Water Use (MG)	Daily Per Capita Water Use GPCD
<b>10 to 15 Year Baseline</b>			
Year 1	2001	8,717	787
Year 2	2002	9,416	917
Year 3	2003	9,792	942
Year 4	2004	10,350	987
Year 5	2005	10,985	991
Year 6	2006	12,062	1,019
Year 7	2007	12,571	1,265
Year 8	2008	12,841	1,273
Year 9	2009	13,286	1,200

<b>Table 5-3 Gallons Per Capita Per Day GPCD (SB X7-7 Table 5)</b>				
<b>Baseline Year</b>		<b>Service Area Population</b>	<b>Annual Gross Water Use (MG)</b>	<b>Daily Per Capita Water Use GPCD</b>
Year 10	2010	13,554	1,079	218
<b>10 Year Average Baseline</b>				<b>253</b>
<b>5 Year Baseline</b>				
Year 1	2006	12,062	1,019	231
Year 2	2007	12,571	1,265	276
Year 3	2008	12,841	1,273	272
Year 4	2009	13,286	1,200	247
Year 5	2010	13,554	1,079	218
<b>5 Year Average Baseline</b>				<b>249</b>
<b>2015 Compliance Year</b>				
<b>2015</b>		14,475	898	<b>172</b>

Table 5-4 provides a summary of the calculated baselines and 2015 consumption based on the data provided in Table 5-3.

<b>Table 5-4 Summary of baselines and current consumption (SB X7-7 Table 6)</b>	
10 Year Baseline GPCD	253
5 Year Baseline GPCD	249
2015 Compliance Year GPCD	172

## 5.7. 2015 and 2020 Targets

*CWC 10608.20(e)*

*An urban retail water supplier shall include in its urban water management plan due in 2010. . . urban water use target, interim urban water use target, along with the bases for determining those estimates, including references to supporting data (10608.20(e)).*

*CWC 10608.20*

*(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan...*

The UWMPA requires urban water suppliers to determine the 2020 Urban Water Use Target. Four target methods have been developed, and identify the specific steps water suppliers shall follow to establish these targets. These methods are as follows:

- ❖ Target Method 1: 80% of 10-to 15-Year Baseline

- ❖ Target Method 2: Performance Standards
- ❖ Target Method 3: 95% of Hydrologic Regional Target
- ❖ Target Method 4: Savings by Water Sector

Once the 2015 plan is submitted, the Target Method may not be changed in any amendments to the 2015 Plan or in the 2020 Plan.

#### **5.7.1. Target Method**

The City's 2015 UWMP will be utilizing Target Method 1. The 2020 Urban Water Use Target is calculated as 80 percent of the base daily per capita water use. This 20 percent reduction of the 10 Year Baseline was determined to be 203 GPCD as shown Table 5-5.

<b>Table 5-5 Target Method 1 20% Reduction (SB X7-7 Table 7-A)</b>	
<b>10 Year Baseline</b>	<b>2020 Target GPCD</b>
253	203

#### **5.7.2. Target Confirmation – Use of 5 Year Baseline**

CWC 10608.22

*Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.*

The 2020 water use target must reduce the City's 2020 water use by a minimum of 5% from the 5-year baseline. Table 5-6 shows that the Confirmed 2020 water use target is below that minimum at 203 GPCD.

<b>Table 5-6 Confirm Minimum Reduction for 2020 Target (SB X7-7 Table 7-F)</b>			
5 Year Baseline GPCD	Maximum 2020 Target <sup>(1)</sup>	Calculated 2020 Target	Confirmed 2020 Target
249	236	203	203
NOTES:			
<sup>(1)</sup> Maximum 2020 Target is 95% of the 5 Year Baseline GPCD			

#### **5.7.3. 2015 Interim Urban Water Use Target**

The 2015 Interim Target is the value halfway between the 10-year Baseline and the Confirmed 2020 Target. The City's 2015 Interim Target of 228 GPCD is shown in Table 5-7 below.

Table 5-7 2015 Interim Target GPCD (SB X7-7 Table 8)		
Confirmed 2020 Target	10-year Baseline GPCD	2015 Interim Target GPCD
203	253	228

#### 5.7.4. Baselines and Targets Summary

A summary of baselines and targets is shown in Table 5-8 below.

Table 5-8 Baselines and Targets Summary (Standard Table 5-1)					
Baseline Period	Start Year	End Year	Average Baseline <sup>(1)</sup>	2015 Interim Target <sup>(1)</sup>	Confirmed 2020 Target <sup>(1)</sup>
10 year	2001	2010	253	228	203
5 Year	2006	2010	249		
NOTES:					
<sup>(1)</sup> All values are in Gallons per Capita per Day GPCD.					

### 5.8. 2015 Compliance Daily per Capita Water Use

*CWC 10608.12 (e)*

*“Compliance daily per-capita water use” means the gross water use during the final year of the reporting period...*

*CWC 10608.24 (a)*

*Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.*

*CWC 10608.20(e)*

*An urban retail water supplier shall include in its urban water management plan due in 2010...compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.*

Water suppliers must calculate their actual 2015 water use for the calendar year to determine whether they have met their per capita 2015 and asses their progress towards meeting their 2020 target water use.

#### 5.8.1. Meeting the 2015 Target

In 2015 the City’s actual daily per capita water use was determined to be 172 GPCD, which is less than the 2015 Interim Target of 228 GPCD and Confirmed 2020 Target of 203 GPCD. Therefore, the City has met their 2015 per capita water use and is already on track to meet the Confirmed 2020 Target. This confirmation can be seen in Table 5-9 in the following section.

### 5.8.2. Adjustments to Gross Water Use

**CWC 10608.24 (d)**

*When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:*

*Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.*

*Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.*

*Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.*

*If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.*

*Methodology Document, Methodology 4*

*This section discusses adjustments to compliance-year because of changes in distribution area caused by mergers, annexation, and other scenarios that occur between the baseline and compliance years.*

For this 2015 UWMP the City of Kerman has achieved their targeted reduction. As shown in Table 5-8 in Section 5.7.4, the City is already in compliance with their 2020 Confirmed Target of 203 GPCD.

**Table 5-9 2015 Compliance (Standard Table 5-2)**

Actual 2015	2015 Interim Target	Optional Adjustments to 2015					2015 GPCD	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events	Economic Adjustment	Weather Normalization	TOTAL Adjustments	Adjusted 2015		
172	228	-	-	-	-	172	172	Yes

## CHAPTER 6 SYSTEM SUPPLIES

### 6.1. Purchased Water

The City of Kerman currently does not purchase water from any other urban water suppliers or other entities. Due to the City's water quality violations, the City will be required to analyze purchasing water from FID or the City of Fresno. This water supply alternative is discussed in more detail in Section 6.2.1.

### 6.2. Groundwater

The City of Kerman has historically relied on groundwater from the San Joaquin Valley Groundwater Basin as a major source of supply. Six active domestic water supply wells are used to provided potable water to City customers. Each well pumps water directly into the water system, which includes approximately 3,479 user connections and two 750,000-gallon water storage tanks.

The City extracts groundwater from six active wells, Well Nos. 09A, 10, 12, 14, 15 and 17. Well No. 10 currently acts only as a standby. The City's existing well capacities range from 900 to 1,500 gallons per minute (gpm), with a total combined capacity of approximately 6,700 gpm. With the largest well out of service, Well No. 10, the combined capacity of the system is approximately 5,200 gpm. The City's booster pumps can add an additional 4,000 gpm to the water system. Information on the City's wells is summarized in Table 6-1.

Table 6-1 Existing Groundwater Well Operation			
Well No.	HP	Design Capacity	
		GPM	MGD
09A	200	1,200	1.73
10	150	1,500	2.16
12	100	1,200	1.73
14	150	900	1.30
15	150	900	1.30
17	125	1,000	1.44
<b>TOTAL</b>		<b>6,700</b>	<b>9.65</b>

The City's water distribution system consists of a network of water lines located throughout the community. Currently, there are approximately 2,172 metered and 1,307 unmetered connections in the City's water system; of which, 3,167 of the connections are single family and multi-family residential uses. Water lines within the system range in diameter from 4 to 12-inches. The water mains are usually placed in a grid pattern with 12-inch mains every half-mile and 8-inch mains at the quarter mile locations. Depending on the number of units served, the intervening mains are either 6 or 8-inches in diameters.

According to the City's 2027 General Plan, the existing distribution system is adequate to satisfy the City's current water demands and provides the required Uniform Fire Code fire flows. The City operates the system at a pressure that ranges for 50 to 60 pounds per square inch (psi).

### 6.2.1. Groundwater Quality

The City conducts periodic sampling of the water quality from all water supply wells. Table 6-2 below contains a summary of the City's most recent water quality results from each of the water supply wells.

Table 6-2 Groundwater Quality by Well						
Constituent	Raw Water					
	09A	10	12	14	15	17
<b>Primary</b>						
Aluminum, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Antimony, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Arsenic, µg/L	6.6	4.1	6.9	5.6	7	3.3
Barium, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Beryllium, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Cadmium, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Chromium, µg/L	30	21	30	30	31	21
Cyanide, µg/L	NR	< 0.0	< 0.0	NR	NR	< 0.0
Fluoride, mg/L	0.13	0.1	0.12	0.12	0.12	0.11
Hexavalent chromium, µg/L	31	17	21	31	29	19
Mercury, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Nickel, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Nitrate (as Nitrogen), mg/L	1.8	1.6	1.6	1.8	1.6	1.5
Nitrate + Nitrite (sum as Nitrogen), mg/L	NR	NR	NR	NR	NR	NR
Nitrite (as nitrogen), mg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Perchlorate, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Selenium, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Thallium, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
<b>Secondary</b>						
Color, Units	5	5	5	< 0.0	< 0.0	< 0.0
Copper, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Foaming Agents (MBAS), mg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	0.054
Iron, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Manganese, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Methyl-tert-butyl ether (MTBE), µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Odor (Threshold at 60°C), Ton	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	1.2
Silver, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Thiobencarb, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Turbidity, NTU	0.18	0.14	0.17	0.23	0.15	0.07
Zinc, µg/L	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
Total Dissolved Solids, mg/L	140	150	130	140	130	160
Specific Conductance, µS/L	190	390	200	180	240	240
Chloride, mg/L	9.5	6.1	6.2	6.6	6.3	11
Sulfate, mg/L	3.2	2.9	3	3.3	3.1	2.7

#### **Table 6-2 Groundwater Quality by Well**

##### NOTES:

Source of information is provided by the Safe Drinking Water Information System (SDWIS), State Water Resources Control Board.

NR: No Record

Hexavalent chromium, or chromium 6, is currently the largest threat to the City's water supply. California Code of Regulations (CCR) Title 22, Division 4, Chapter 15, Article 4, establishes primary drinking water standards and monitoring and reporting requirements for inorganic constituents. Community water systems must comply with the Maximum Contaminant Level (MCL) for chromium 6 of 10 $\mu$ g/L, as established in Section 64431. All six of the City's wells have periodically exceeded the MCL for chromium 6, and as a result, the City has been required to identify improvements to the water system that are designed to correct this violation and ensure that the water system delivers water that meets primary drinking water standards.

As a result of this violation, the City is currently applying for state funding to evaluate treatment options to reduce chromium 6 below the MCL. The City will be required to analyze purchasing water from the Fresno Irrigation District (FID) or the City of Fresno as an alternative to address the chromium 6 violation.

Additionally, Well No. 10 has a history of producing high levels of uranium and has been placed on standby status as a result. Besides the presence of uranium and chromium 6 in the groundwater supply, the raw water produced by the City's wells meets all primary and secondary maximum contaminant levels associated with health and safety.

#### **6.2.2. Basin Description**

##### *CWC 10631 (b)*

*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:*

*(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.*

The City of Kerman is located in the Tulare Lake Hydrologic Region (groundwater basin) and extracts water from the Kings subbasin (DWR subbasin 5-22.08). The Kings subbasin covers approximately 1,530 square miles. DWR Bulletin 118 – Update 2003, “California’s Groundwater” contains a detailed description of the Kings subbasin and its characteristics and conditions. A copy of this description is included in Appendix G.

As part of the San Joaquin Valley Groundwater Basin, the Kings subbasin straddles portions of both the Sacramento and San Joaquin Valleys in Fresno, Kings, and Tulare County. The subbasin occupies approximately 976,000 acres, and is bordered to the north by the San Joaquin River. The subbasin is bordered on the south by the southern fork of the Kings River and the northern boundaries of the Empire West Side Irrigation District and Kings County Water District, southern boundaries of Laguna, Consolidated, and Alta Irrigation Districts, and western boundary of Stone Corral Irrigation District. The

eastern boundary of the subbasin is the alluvium-granite rock of the Sierra Nevada. The western boundary is the eastern boundaries of the Delta-Mendota and Westside subbasins.

The subbasin is primarily comprised of marine deposits from periodic inundation of the Pacific Ocean and continental deposits from erosion of surrounding mountains. The principal aquifers consist of unconsolidated continental deposits (older deposits from the Tertiary and Quaternary age overlain with younger deposits from the Quaternary age), and coarse oxidized deposits of the alluvium. Quaternary deposits consist of older alluvium, lacustrine and marsh deposits, younger alluvium, flood-basin deposits, and sand dunes. The older alluvium is the most important aquifer in the subbasin and yields from these wells can reach above 3,000 gpm. The flood-basin, lacustrine, and marsh deposits located in the western part of the sub-basin consist of silt and clay that restrict vertical movement of water and do not produce appreciable wells. In the Kerman area, the soils are typically coarse sands with high percolation rates and specific yields, but areas of clay soils exist in some areas.

Groundwater recharge comes from river, stream, and canal seepage, percolation of irrigation water, and intentional recharge. For the most part, the groundwater table in the Kerman area is dependent on snow melt and runoff in canals and ditches of the Fresno Irrigation District as well as recharge from the San Joaquin River. Snow pack in the Sierra Nevada to the east is variable and total water supply to the area is subject to wide fluctuations in volume. Groundwater pumping is inversely proportional to the surface water supply available in the region, and in years when there is limited surface water available for irrigation, the groundwater levels experience a decline.

In general, groundwater flow is to the southwest based on contours mapped by DWR in recent years, including the area of the City and vicinity. According to DWR Bulletin 118, the estimated storage in the subbasin is approximately 93 million ac-ft. Well depths range from 100 to 500 ft, with an average depth of 210 ft. For municipal and irrigation wells, well yields typically range from 20 to 3,000 gallons per minute (gpm) and average 500-1,500 gpm. Specific yield in the subbasin ranges from 0.2 percent to 36 percent, with an average specific yield estimated to be 11.3 percent.

### **6.2.3. Groundwater Management**

**CWC 10631 (b)**

*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:*

*A copy of any groundwater management plan adopted by the urban water supplier... or any other specific authorization for groundwater management.*

*...For basins that 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.*

The City relies 100% on local groundwater for its water supplies. The San Joaquin River Groundwater Basin is not adjudicated. Therefore, there are no limitations placed on groundwater pumpage volumes, but groundwater must be beneficially used. The City is responsible for monitoring groundwater levels,

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quantities, and quality of its portable supply wells and makes all information available to the Community, agencies, and stakeholders, including the State of California.

The City is a member of the Fresno Area Regional Groundwater Management Group (FARGMP). As a partnership of local municipal water purveyors, irrigation districts, a flood control district, and the overlaying county, the FARGMP adopted a regional Groundwater Management Plan (GMP). The GMP satisfies the requirements for Groundwater Management Plans created by the September 2002 California State Bill No. 1938, which amended Sections 10753 and 10795 of the California Water Code (CWC). The City of Kerman adopted the GMP on March 1, 2006.

The objectives of the FARGMP have been developed to monitor, protect, and sustain groundwater within the region. More specifically, objectives of the GMP include:

- ❖ Preserve and enhance the existing quality of the area's groundwater;
- ❖ Correct the overdraft and stabilize groundwater levels at the highest practical beneficial levels;
- ❖ Preserve untreated groundwater as the primary source of domestic water;
- ❖ Maximize the available water supply, including conjunctive use of surface water and groundwater;
- ❖ Conserve the water resource for long-term beneficial use and assure an adequate supply for the future;
- ❖ Manage groundwater resources to the extent necessary to ensure reasonable, beneficial, and continued use of the resource;
- ❖ Monitor groundwater quality and quantity to provide the requisite information for establishing groundwater policies, goals, and recommended actions; and
- ❖ Improve coordination and consistency among agencies responsible for the monitoring and management of groundwater in the Plan Area.

Each participating agency who is a member of the FARGMP retains authority and responsibility for groundwater management within its own jurisdiction. A copy of the FARGMP is provided in Appendix H.

Groundwater has been at the forefront of the State's water supply concerns more recently due to the rapid decline in groundwater levels and storage, land subsidence, seawater intrusion and degradation of groundwater quality over the last few years. The severity of these issues ultimately led to legislature to draft three bills which were signed by the Governor on September 16, 2014, and laid the foundation for the Sustainable Groundwater Management Act (SGMA). The SGMA became effective on January 1, 2015 and established a framework of priorities and requirements to help local agencies sustainably manage groundwater within a basin or subbasin (basin). As required by SGMA, each groundwater basin is to develop a Groundwater Sustainability Agency (GSA), a Groundwater Sustainability Plan (GSP) and attain sustainability within twenty years. The statewide use of groundwater supplies will inevitably change over the next few years, as GSP guidelines are developed and GSA's create plans to fit their unique circumstances.

On September 7, 2016, the City of Kerman adopted Resolution 16-57, approving the formation of a Joint Powers Agreement (JPA) with other local agencies to create the North Kings GSA. The primary purpose of the JPA is to facilitating a cooperative and ongoing working relationship among the agencies and to

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develop and implement mutually beneficial approaches and strategies for implementing the Act in the Kings subbasin. The JPA also desires to facilitate contracts with other agencies, both current and prospective, overlying the subbasin, in order to coordinate with the GSA to implement a GSP and satisfy the requirements of the Act. The North Kings GSA will be responsible for the preparation of a GSP by January 31, 2020. Once developed, the City of Kerman will adopt and implement the GSP to achieve groundwater sustainability within the Kings subbasin by 2040, as required by the SGMA.

#### **6.2.4. Overdraft Conditions**

*CWC 10631(b)(2).*

*For basins that have not been adjudicated, (provide) 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.*

The 2003 update to the DWR Bulletin 118 identifies groundwater overdraft as the condition of a groundwater basin or subbasin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years, during which, the water supply conditions approximate average conditions. Conditions of critical overdraft result in undesirable impacts which can include land subsidence, groundwater depletion, and/or chronic lowering of groundwater levels. All basins designated as high or medium priority and subject to critical conditions of overdraft are required to be managed under a groundwater sustainability plan or coordinated groundwater sustainability plans by January 31, 2020.

In Chapter 6 of Bulletin 118, the DWR identifies the Kings subbasin as critically overdrafted subbasins; the conditions were not reevaluated for the 2003 update to Bulletin 118. Overdraft conditions in the Kings subbasin were previously estimated by the Kings River Conservation District (KRCR) to be an average of 52,462 MG/yr from 1964-2004, with approximately 3.2 million gallons of groundwater mined in the last 50 years or so. The KRCR models also project that overdraft conditions will average around 3,975 MG/yr through 2035.

The City of Kerman is engaged in groundwater recharge projects and activities that reduce the consumptive use of groundwater and are intended to relieve and eliminate long term overdraft of the Kings subbasin. For example, treated wastewater from the City's Wastewater Treatment Plant (WWTP) is directed to recharge basins where it percolates into the soil and recharges the groundwater table. The City also maintains eleven ponding basins that also provide groundwater recharge, although the volume has not been quantified. The percolated wastewater and stormwater is subsequently pumped as groundwater for local crop irrigation.

The City also recycles water by providing treated wastewater effluent to agricultural customers surrounding the WWTP for the irrigation of non-potable crops. To encourage local farmers to utilize

recycled water for irrigation of their non-potable crops in lieu of pumping groundwater, the City has been offering this treated effluent for irrigation purposes at no charge to the local farmers. However, the City anticipates that the total volume of recycled water dedicated to this use will decrease as the current irrigated property will be developed for other uses over time and will no longer be irrigated with the City's recycled water. Also, fewer farmers in area are irrigating crops that are compatible with the City's effluent

The SGMA established a framework of priorities and requirements to help local agencies sustainably manage groundwater within a basin. As required by SGMA, each groundwater basin is to develop a GSA, a GSP, and achieve groundwater sustainability within twenty years after adopting a GSP. A major benefit of forming GSA's is the elimination of long-term groundwater overdraft. As previously state above, the City has joined other local agencies in the formation of the North Kings GSA. By 2020, the GSA will adopt a regionally based GSP to achieve groundwater sustainability within the Kings subbasin by 2040.

#### **6.2.5. Historical Pumping**

*CWC 10631 (b)*

*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:*

*3) (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. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

The City is not restricted to a specific volume of groundwater from the Kings subbasin. The amount of groundwater pumped in the last five years has been sufficient to meet the City's demands. Table 6-3 below shows historic groundwater pumping over the last five years.

**Table 6-3 Groundwater Volume Pumped**

<input type="checkbox"/>	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Kings subbasin	1,065	1,122	1,161	1,054	898
	<b>TOTAL</b>	1,065	1,122	1,161	1,054	898

#### **6.2.6. Groundwater Banking**

The City does not have any plans to practice groundwater banking.

### **6.3. Surface Water**

As previously stated, the City's sole supply source is groundwater from municipal wells. Currently, the City does not use self-supplied surface water as part it its water supply. There are no natural surface water features such as streams or lakes in the Kerman area. However, according the City's 2007-2027 General Plan, the City has been exploring the possibility of supplementing its groundwater supply with treated

surface water supplied by the Fresno Irrigation District (FID). FID currently supplies irrigation water to surrounding agricultural users. According to the General Plan, as the City expands towards their SOI and agricultural uses are replaced by urban developments, the water that was once used to irrigate crops could now be used to meet municipal needs.

One concept that could potentially help the City supplement its groundwater supply for surface water is the use of a dual water system. With a dual system, the City's primary water system would be responsible for providing potable water for domestic use, while a secondary system would provide non-potable water for landscaping, industrial water use, and fire protection. Preliminary planning and design of this dual system has commenced and several purple pipe segments have already been installed in the northeast quadrant of the City.

## **6.4. Stormwater**

The City maintains stormwater facilities within existing right-of-ways. The City's stormwater system consist of a system of drains and ponding basins located throughout the City. The stormwater ponding basins consist of eleven percolation basins that provide groundwater recharge. The percolated stormwater is subsequently pumped as groundwater for local crop irrigation.

## **6.5. Wastewater and Recycled Water**

### **6.5.1. Recycled Water Coordination**

*CWC 10633*

*The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.*

Currently, the City recycles water by providing treated wastewater effluent to agricultural customers surrounding the WWTP for the irrigation of non-potable crops. To encourage local farmers to utilize recycled water for irrigation of their non-potable crops in lieu of pumping groundwater, the City has been offering this treated effluent for irrigation purposes at no charge to the local farmers.

### **6.5.2. Wastewater Collection, Treatment, and Disposal**

*CWC 10633 (a)*

*(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.*

*CWC 10633 (b)*

*(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.*

The City of Kerman collects, treats, and recycles municipal wastewater generated from a combination of residential, commercial, and industrial sources. Wastewater is collected and treated at the City's Wastewater Treatment Plant (WWTP) located south of Church Avenue and the Del Norte Avenue alignment. The existing plant was originally designed with a capacity of 1.34 million gallons per day (MGD) and consisted of a lift station, a headworks including an auger screen and Parshall Flume flow meter, a primary aeration pond, three secondary aeration ponds, three settling ponds, three disposal ponds and a concrete control structure responsible for controlling and conveying wastewater flows between the treatment units.

The existing WWTP was expanded in 2011 and capacity of the plant increased from 1.34 MGD to 2.0 MGD. The upgraded plant has been determined to be sufficient to accommodate anticipated growth until the year 2027. Table 6-4 provides a total volume of wastewater collected within the service area in 2015.

**Table 6-4 Wastewater Collected Within Service Area in 2015 (Standard Table 6-2)**

<input type="checkbox"/>	There is no wastewater collection system. The supplier will not complete the table below.					
100%	Percentage of 2015 service area covered by wastewater collection system					
100%	Percentage of 2015 service area population covered by wastewater collection system					
<b>Wastewater Collection</b>			<b>Recipient of Collected Wastewater</b>			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? (optional)
City of Kerman	Metered	362	City of Kerman	City of Kerman	Yes	No
<b>Total Wastewater Collected from Service Area in 2015:</b>		362				

The newly upgraded, state-of-the-art WWTP meets all State requirements for the removal of Nitrates, Biochemical Oxygen Demand (BOD) and sludge handling. The upgraded WWTP consist of an influent pump station, headworks, two new clarifiers, a sludge press and one acre of new drying beds. To make use of the original plant, the old aeration tanks were converted to digesters. A Biolac aeration treatment system was also installed as part of the upgrade. By using the aerobic and anaerobic cycle, the treatment system aerates the water, releasing nitrogen to eliminate additional nitrates to the groundwater table. The exiting storage ponds and disposal ponds were significantly expanded, and a new 5,000-gallon storage tank for receiving domestic septic was installed.

As part of the upgrade, the City installed a 0.5 megawatt solar park to buffer rising power cost to operate the WWTP. By using solar power as an energy source, Kerman’s taxpayers enjoy approximately 40 percent net reduction in the treatment plant’s electricity cost.

Treated wastewater from the WWTP currently is directed to recharge basins where it percolates into the soil and recharges the groundwater table. The City’s secondary effluent is not disinfected and is therefore classified as an “oxidized” (undisinfected secondary) wastewater according to California Code of Regulations (CCR) Title 22. The plants secondary effluent is also reclaimed by neighboring farmers who use the water to irrigate non-potable crops. Table 6-5 provides the total volume of wastewater treated, discharged and recycled within the City.

**Table 6-5 Wastewater Treatment and Discharge Within Service Area in 2015 (Standard Table 6-3)**

		No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.								
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number <i>(optional)</i>	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
City of Kerman	Percolation Ponds	Percolation		Percolation Ponds	No	Secondary Undisinfected	362	0	290	0
City of Kerman	Reclamation Area	Irrigation of Non-Potable Crops		Land Disposal	No	Secondary Undisinfected	-	0	72	0
<b>Total</b>							<b>362</b>	<b>0</b>	<b>362</b>	<b>0</b>

### 6.5.3. Recycled Water System

*CWC 10633(c)*

*(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.*

The City does not currently treat any wastewater to disinfected tertiary water standards to allow it to be used as a component of its water supply. Most of the effluent from the City's WWTP is discharged to percolation ponds where it either evaporates or percolates. Percolated wastewater is subsequently pumped as groundwater for local crop irrigation.

Over the past five years, agricultural irrigation accounted for approximately 14 percent of the City's current effluent design flow of 2.0 million gallons per day (MGD). This reuse of effluent reduces the demand on the other water supplies available to the area, primarily groundwater. As the City develops and agricultural uses are replaced by new development, the City anticipates that the demand for recycled water will decrease. To encourage agricultural customers to use recycled water for irrigation purposes in lieu of pumping groundwater, the City will continue to offer recycled water to agricultural users at no charge.

### 6.5.4. Recycled Water Beneficial Uses

*CWC 10633(d)*

*(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.*

*CWC 10633(e)*

*(Describe) the projected use of recycled water within the supplier's service area at the end of 5, 10, 15 and 20 years...*

As previously stated, the City's WWTP produces undisinfected secondary effluent, which cannot be used as a component of the City's water supply and is approved only for the irrigation of non-potable crops. A majority of the City's effluent is discharged to percolation ponds where it either evaporates or percolates. Table 6-6 shows the current and projected recycled water uses through the year 2040. Although not recognized as a beneficial reuse, percolation provides additional groundwater recharge.

Currently, the City provides recycled water to agricultural customers for the irrigation of non-potable crops. However, the City anticipates that the total volume of recycled water used for agricultural irrigation will decrease in the near future, as agricultural properties that produce non-potable crops becomes less available. For this reason, the City's recycled water demand is assumed to remain constant. Table 6-6 displays the current and projected recycled water, using the City's average recycled water demand of 130 MG.

**Table 6-6 Current and Projected Recycled Water Direct Beneficial Uses Within Service Area (Standard Table 6-4)**

<input type="checkbox"/>		Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.							
Name of Agency Producing (Treating) the Recycled Water:		City of Kerman							
Name of Agency Operating the Recycled Water Distribution System:		City of Kerman							
Supplemental Water Added in 2015									
Source of 2015 Supplemental Water									
Beneficial Use Type		General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040
Agricultural irrigation		Irrigation of Non-Potable Crops	Undisinfected Secondary	72	103	103	103	103	103
Landscape irrigation (excludes golf courses)									
Golf course irrigation									
Commercial use									
Industrial use									
Geothermal and other energy production									
Seawater intrusion barrier									
Recreational impoundment									
Wetlands or wildlife habitat									
Groundwater recharge (IPR)									
Surface water augmentation (IPR)									
Direct potable reuse									
Other	-								
			<b>Total</b>	<b>72</b>	<b>103</b>	<b>103</b>	<b>103</b>	<b>103</b>	<b>103</b>

#### 6.5.4.1. Planned Versus Actual Use of Recycled Water

*CWC 10633(e)*

*(Describe) 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 pursuant to this subdivision.*

As previously stated in the above sections, the City's water recycling options include using recycled water for the irrigation of non-potable crops and groundwater recharged through the use of percolation ponds at the City's WWTP. Over the last five years, the City has used approximate 103 MG of recycled water on an annual basis for agricultural irrigation. According to the City's 2010 UWMP, the City estimated that approximately 117 MG of recycled water would be used for agricultural reclamation. Table 6-7 displays the 2010 UWMP projection for recycled water verses the 2015 actual use.

**Table 6-7 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual (Standard Table 6-5)**

Use Type	2010 Projection for 2015	2015 Actual Use
□	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.	
Agricultural irrigation	117	72
Landscape irrigation (excludes golf courses)		
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Surface water augmentation (IPR)		
Direct potable reuse		
Other	Required for this use	
	<b>Total</b>	<b>117</b>
		<b>103</b>

### 6.5.5. Actions to Encourage and Optimize Future Recycled Water Use

*CWC 10633(f)*

*(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.*

*CWC 10633(g)*

*(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.*

To encourage more agricultural customers to use recycled water for irrigation purposes in lieu of pumping groundwater, the City plans to expand the non-potable distribution system to reach other out-lying agricultural customers in the vicinity of the treatment plant. The City will also continue to offer recycled water to agricultural users at no charge. Actions to encourage recycled water use are summarized in Table 6-8.

**Table 6-8 Methods to Expand Future Recycled Water Use (Standard Table 6-6)**

<input type="checkbox"/>	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Provide page location of narrative in UWMP			
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Agricultural Irrigation	Continue/expand irrigation of non-potable crop	Ongoing	

### 6.6. Desalinated Water Opportunities

*CWC 10631(i)*

*Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.*

The City lies inland and is not located in a coastal area; therefore, desalination of seawater is not practical. In addition, because the groundwater below the City is not brackish, there are no plans to develop brackish groundwater desalination projects. As a result, the City does not intend to pursue desalination to augment water supplies at this time.

## 6.7. Exchanges or Transfers

*CWC 10631(d).*

*Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.*

The municipal water system that supplies the City's water has historically been a consistent, reliable source; therefore, the City has not been required to exchange or transfer water to meet its demands. There are also no short-term or long-term planned or potential future water exchanges in the region. In the event that untreated groundwater can no longer provide a consistent potable water source, new wells or a well head treatment will be used as needed to avoid a supply deficit.

## 6.8. Future Water Projects

*CWC 10631(h)*

*...The urban water supplier shall include a detailed description of expected future projects and programs... that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.*

As previously stated, the City of Kerman currently relies solely on groundwater for its water supply. Since Well No. 10 has a history of high readings of uranium, the City plans to construct a new well to remove Well No. 10 from service. This new well will also accommodate the City's future water demand. To avoid contaminants such as uranium and chromium 6, the City is planning to drill the new well deeper than the existing wells. The City is planning to have the well operational by the end of 2018. Table 6-9 list the proposed water supply project.

**Table 6-9 Expected Future Water Supply Projects or Programs (Standardized Table 6-7)**

<input type="checkbox"/>	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.				
<input type="checkbox"/>	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.				
Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Additional Description (Planning Period)	Planned Implementation Year	Planned for Use in Year Type
	Y/N	If, Yes provide Agency Name			
New City Well	No			2018	Normal
					1,100 gpm

## 6.9. Summary of Existing and Planned Sources

**CWC 10631**

*(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 10631(a).*

*(4) (Provide 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.*

Water pumped from the City's underlying aquifer has historically been the only source of potable water supply. The City's network of wells has been expanded over the years with a total of seventeen wells having been drilled and placed into service, although not all the wells have been in service simultaneously. Water supply for the City is currently supplied from six active wells with a total design capacity of 6,700 gpm. Well No. 10 currently acts as a standby well. The City also has booster pumps, which can add an additional 4,000 gpm to the water system. Table 6-10 below displays the actual water volume that was pumped from each of the City's wells in 2015.

**Table 6-10 Water Supplies — Actual (Standardized Table 6-8)**

Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume	Water Quality
Groundwater	Well No. 9A	173	Raw Water
Groundwater	Well No. 10	4	Raw Water
Groundwater	Well No. 12	3	Raw Water

Table 6-10 Water Supplies — Actual (Standardized Table 6-8)			
Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume	Water Quality
Groundwater	Well No. 14	148	Raw Water
Groundwater	Well No. 15	249	Raw Water
Groundwater	Well No. 17	320	Raw Water
<b>Total</b>		<b>898</b>	

Four of the City's current active wells pump water directly into the water distribution system, while Well No. 15 pumps water into the City's storage tanks during off-peak power demand times. The City's distribution system includes approximately 3,479 user connections and two 750,000-gallon water storage tanks. Water lines within the distribution system range in diameter from 4 to 12-inches. The water mains are placed in a grid pattern with 12-inch mains every half-mile and 8-inch mains at the quarter mile locations. Depending on the number of units served, the intervening mains are either 6 or 8-inches in diameters.

The City's existing water distribution system is adequate to satisfy current water demands. The existing system also provides the required Uniform Fire Code fire flows. However, as population increases, the City plans to construct additional wells in the future to accommodate the projected increase in water demand. Table 6-11 shows the projected water supply through 2040. Projected water supply is based on the 2.69 percent annual population growth.

**Table 6-11 Water Supplies — Projected (Standard Table 6-9)**

Water Supply	Additional Detail on Water Supply	Projected Water Supply									
		2020		2025		2030		2035		2040	
		Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield
Groundwater		1,025	1,025	1,171	1,171	1,337	1,337	1,527	1,527	1,744	1,744
<b>Total</b>	<b>Total</b>	<b>1,025</b>	<b>1,025</b>	<b>1,171</b>	<b>1,171</b>	<b>1,337</b>	<b>1,337</b>	<b>1,527</b>	<b>1,527</b>	<b>1,744</b>	<b>1,744</b>

## **6.10. Climate Change Impacts to Supply**

The climatic conditions of the central San Joaquin Valley demand careful water management practices because of the typically low amount of rainfall, short rainy season and the high temperatures that frequently occur in the summer months. The average annual precipitation for the Kerman area is approximately 11 inches. The rainy season typically runs from the beginning of November till the end of April. Drought conditions are not uncommon and can last for multiple years. Summer water consumption varies directly with daily temperature maximums and the Kerman region can experience temperatures over 100 degrees during the summer months.

The City overlies the Kings groundwater subbasin within the San Joaquin Valley Groundwater Basin. Much of the recharge on this basin occurs from river, stream, and canal seepage, percolation of irrigation water, and intentional recharge. Drought periods will reduce the availability of surface water and will limit the amount of recharge. The reduced recharge in combination with increased pumping will cause groundwater levels to decline. Additionally, climate change impacts may cause increased evapotranspiration and a longer growing season, further exacerbating groundwater overdraft and high salinity levels. A copy of the Kings Basin Water Authority IRWMP Climate Change Vulnerability Assessment is included in Appendix E.

## CHAPTER 7 WATER SUPPLY RELIABILITY ASSESSMENT

### 7.1. Introduction

The Urban Water Management Planning Act (UWMWA) requires that the Urban Water Management Plan (UWMP) address the reliability of the agency's water supplies. This includes supplies that are vulnerable to seasonal or climatic variations. The UWMWA also requires that the UWMP include information on the quality of water supplies and how this affects management strategies and supply reliability. In addition, an analysis must be included to address supply availability in a single dry year and in multiple dry years. The relevant sections of the UWMWA are presented below.

### 7.2. Constraints on Water Sources

*CWC 10631(c)(2)*

*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.*

*CWC 10634*

*The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability*

There are a variety of factors that can impact water supply reliability. These factors include water quality, legal constraints, and climatic issues. A brief discussion on each of these factors is provided below.

#### 7.2.1. Water Quality

The City conducts periodic sampling of the water quality from all supply wells that draw water from the underground aquifer. Raw water produced by these wells mostly meets all the primary maximum contaminant levels associated with health and safety. Hexavalent chromium, chromium 6, is currently the contaminant of primary concern that is present in all six of the City's water supply wells. Results of water samples collected throughout 2015 show a combined average chromium concentration of 21.7 micrograms per liter ( $\mu\text{g}/\text{L}$ ) in the existing wells, determined by values listed in Table 7-1. This average is above the maximum contaminant level of 10  $\mu\text{g}/\text{L}$ . Table 7-1 also displays the most recent chromium 6 concentration, as of August 24, 2016, that has been measured in each groundwater well.

Table 7-1 Average Chromium 6 Concentration		
Well No.	Current Chromium 6 Level ( $\mu\text{g/L}$ ) <sup>(1)</sup>	2015 Annual Average Level for Chromium 6 ( $\mu\text{g/L}$ )
09A	31	27.5
10	8.1	13.9
12	28	15.8
14	33	27.8
15	32	27.3
17	21	17.8
<b>Average</b>		<b>21.7</b>
NOTES:		
<sup>(1)</sup> Current levels were sampled on August 24, 2016.		

Although not considered a water emergency, those who drink water containing chromium 6 over the MCL for many years may have an increased risk of getting cancer. On September 30, 2015, the City issued a public notice to residents regarding the excessive levels of chromium 6 in the water supply. According to the City's most recent Consumer Confidence Report (CCR 2015), the City is currently applying for state funding to evaluate treatment options to reduce chromium 6 below the MCL.

Well No. 10 has a history of producing high levels of uranium and as a result, has been placed on standby status. As of March 23, 2014, Well No. 10 had a uranium concentration of 10 picocuries per liter (pCi/L), which is below the Maximum Contaminant Level (MCL) of pCi/L. However, the concentration was still over the Detection Limit for Purposes of Reporting (DLR) of 1 pCi/L. The City plans to remove Well No. 10 from service and add an additional well by the end of 2018. To avoid contaminants such as uranium and chromium 6, the City is planning to drill future wells deeper than the existing wells.

### 7.2.2. Climatic Changes

The climatic conditions of the central San Joaquin Valley demand careful water management practices because of the typically low amount of rainfall and short rainy season and because of the high temperatures that frequently occur in the summer months. The average annual precipitation for the Kerman area is approximately 11 inches. The rainy season typically runs from the beginning of November till the end of April. Drought conditions are not uncommon and can last for multiple years. Summer water consumption varies directly with daily temperature maximums and the Kerman region experiences temperatures over 100 degrees during the summer months.

The reliability and vulnerability of the City's water supply to seasonal or climactic changes can be easily qualified, but reliability and vulnerability are difficult to quantify. Because the City relies entirely on groundwater using multiple extraction wells, the intermittent overdraft will obviously be more severe during drought periods. As growth in the area continues and increased demands are placed on the groundwater resources of the area, a condition of sustained overdraft may be reached but this condition is not expected to occur for many years. Recharge, conservation, and seeking new primary and backup water sources, such as surface water, will all reduce vulnerability and increase reliability.

### **7.2.3. Legal Constraints**

Legal factors, such as pumping limitations in adjudicated groundwater basins and surface water contracts, can affect the reliability of a water distribution system. As noted in Chapter 6, the Kings subbasin which is currently the City's only supply source, is not an adjudicated groundwater basin. Therefore, adjudication-related legal limitations are unlikely to affect the amount of groundwater that the City can extract from this subbasin.

The Sustainable Groundwater Management Act (SGMA), signed by the Governor in September 2014 provides for the regulation of critically over-drafted groundwater basins by forming Groundwater Sustainability Agencies (GSAs) or by the State if a local GSA is not established. The SGMA, which became effective January 1, 2015, establishes a framework of priorities and requirements to help local agencies sustainably manage groundwater within a basin or subbasin (basin). The SGMA allows local agencies to form a GSA through either a Joint Powers Authority (JPA), a Memorandum of Agreement (MOA) or another legal agreement. The City of Kerman and other regional stakeholders have formed the North Kings GSA through a JPA to address the requirements of the SGMA. Once a Groundwater Sustainability Plan (GSP) is developed, the City will be better positions to specifically address the policies and goals of the regionally developed and focused plan.

Similarly, in response to the current multi-year drought, the Governor by Executive Order caused California water suppliers to reduce water consumption by 25%. Further regulatory enforcement of this Executive Order may prove to be another example of a regulatory shortage that is legal in nature.

## **7.3. Reliability by Type of Year**

### *CWC Section 10631*

*(c)(1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:*

- (A) an average water year,*
- (B) a single dry water year,*
- (C) multiple dry water years.*

Based on the resiliency of the groundwater basin and as long as potable groundwater can be extracted by the City wells, which are individual sources in certain respects, it is not anticipated that a single or multiple dry year period will reduce the availability of water supply to the City, as shown in Table 7-2 on the following page. The reliability of water service is subject to proper operation and maintenance of the water distribution system and its ability to deliver water. The City's water distribution system has historically provided a very reliable level of service.

As the City's water system expands, additional wells and storage facilities will be needed. As a result, system reliability does not diminish as it expands into new service areas. Funds to maintain and expand the system to meet the continued growth in water demand will be collected through water rates and development fees.

**Table 7-2 Basis of Water Year Data (Standard Table 7-1)**

Year Type	Base Year	Available Supplies if Year Type Repeats	
		Volume Available	% of Average Supply
Average Year	2015		100%
Single-Dry Year	2015		100%
Multiple-Dry Years 1st Year	2015		100%
Multiple-Dry Years 2nd Year	2015		100%
Multiple-Dry Years 3rd Year	2015		100%

## 7.4. Supply and Demand Assessment

### CWC 10635 (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.*

### 7.4.1. Normal Year

The reliability of the City's water supply and lack of vulnerability to seasonal or climatic shortage is discussed in Chapter 6. As previously stated, based on the resiliency of the groundwater basin and as long as potable groundwater can be extracted by the City wells, which are individual sources in certain respects, it is not anticipated that a single or multiple dry year period will reduce the availability of water supply to the City.

Groundwater has and will continue to provide drought protection for the City. However, the City has engaged in extensive emergency planning in preparation for potential service interruptions and a Water Shortage Contingency Plan is presented in Chapter 8.

Comparisons of projected supply and demand for normal year through 2040, in five-year increments are presented in Table 7-3.

**Table 7-3 Normal Year Supply and Demand Comparison (Standard Table 7-2)**

	2020	2025	2030	2035	2040
Supply totals	1,025	1,171	1,337	1,527	1,744
Demand totals	1,025	1,171	1,337	1,527	1,744
Difference	0	0	0	0	0

#### 7.4.2. Single Dry Year

Dry year effects are simulated through a methodology which assumes that dry year demand will decrease by approximately 10 percent below normal year demands as a consequence of mandatory water use restrictions. Projected supplies were compared to the decreased demands for dry years and are presented in Table 7-4.

**Table 7-4 Single Dry Year Supply and Demand Comparison (Standard Table 7-3)**

	2020	2025	2030	2035	2040
Supply totals	923	1,054	1,203	1,374	1,569
Demand totals	923	1,054	1,203	1,374	1,569
Difference	0	0	0	0	0

#### 7.4.3. Multiple Dry year

Table 7-5 shows water supply and demands during multiple dry year events over the planning period. Multiple dry year effects are simulated through a methodology which assumes that the second dry year will decrease by approximately 20 percent below normal year demands as a consequence of mandatory water use restriction. Similarly, the third dry year will decrease by approximately 30 percent below normal year demands.

**Table 7-5 Multiple Dry Years Supply and Demand Comparison (Standard Table 7-4)**

		2020	2025	2030	2035	2040
First year	Supply totals	923	1,054	1,203	1,374	1,569
	Demand totals	923	1,054	1,203	1,374	1,569
	Difference	0	0	0	0	0
Second year	Supply totals	820	937	1,070	1,222	1,395
	Demand totals	820	937	1,070	1,222	1,395
	Difference	0	0	0	0	0
Third year	Supply totals	718	820	936	1,069	1,221
	Demand totals	718	820	936	1,069	1,221
	Difference	0	0	0	0	0

As shown in Tables 7-3, 7-4, and 7-5, anticipated supplies for groundwater are sufficient to meet all demands through year 2040 even under drought conditions. Currently, groundwater well capacity is much higher than the supply totals reported. However, it is important to consider that the subbasin has historically been in a state of overdraft. The data in Tables 7-3, 7-4 and 7-5 assume that the supply is equal to demand only because there is currently a sufficient volume of water within the subbasin to meet the projected demand. In order to continue to utilize groundwater, it is essential that the City continue its current efforts towards conservation, groundwater recharge, and groundwater management. Reducing per capita water use, groundwater recharge, water metering, and recycled water are all important components of ensuring future usage of the Kings subbasin. Groundwater banking for drought years is also recommended, so that years with low surface runoff do not further harm the subbasin. The City will need to continually develop additional water management strategies to meet projected demand on a long term basis.

## 7.5. Regional Supply Reliability

*CWC 10620 (f)*

*An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*

The City recognizes the importance of maintaining a high quality, reliable water supply. Although water is a renewable resource, there is a limit on the amount of water that can be sustainably drawn from a given supply source (e.g., groundwater basins, surface water sources). But because of significant capital investments and uncertainty associated with the development of a surface water supply from the Fresno Irrigation District (FID), the use of groundwater as a primary water supply source is expected to continue through the immediate future.

Determining the supply reliability for the City is difficult because of the complex factors that accompany groundwater use in general. The City's wells currently draw water from a non-adjudicated groundwater basin (Kings subbasin) with no limits on pumping, but has been labeled as being in a critical state of overdraft. Therefore, reliability of the groundwater supply will depend on the long-term balance between groundwater extraction and recharge for the subbasin.

To minimize its contribution to groundwater depletion, sustainable use of groundwater supply sources is the primary focus of the City's urban water management activities extending into the future. Consequently, a main focus for the City is to maximize the efficient use of water and to promote conservation. This will be accomplished through the implementation of demand management measures (DMMs) that have not been implemented by the City, continued implementation of DMMs that are currently implemented by the City, and other conservation activities.

## CHAPTER 8 WATER SHORTAGE CONTINGENCY PLANNING

### 8.1. Introduction

*CWC 10632(a)*

*The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier.*

- (1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.*
- (2) 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.*
- (3) 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.*
- (4) 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.*
- (5) 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.*
- (6) Penalties or charges for excessive use, where applicable.*
- (7) 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.*
- (8) A draft water shortage contingency resolution or ordinance.*
- (9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.*

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Water shortage contingency planning is a strategic planning process to prepare for and respond to water shortages. Good planning and preparation can help the City maintain reliable supplies and reduce the impacts of supply interruptions.

This chapter provides a description of the water shortage contingency planning efforts at the City. Guidance is included for reporting the staged response to a water shortage, such as a drought, that occurs over a period of time, as well catastrophic supply interruptions which occur suddenly.

A Water Shortage Contingency Plan (WSCP) is a document that can be created separately from the UWMP and amended as needed without amending the corresponding UWMP. However, the most current version of the WSCP must be included as part of the UWMP when the UWMP is submitted to DWR.

## **8.2. Stages of Action**

*CWC 10632 (a)*

*(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.*

The number of stages of action in a WSCP is at the discretion of the water supplier. Typically, water agencies will include between three to five stages of action in a WSCP. The stages reflect decreasing water supplies with increasing levels of prohibitions and consumption reduction methods. Agencies must include a stage that addresses a reduction of 50 percent in the water supply.

Water agencies relying solely on groundwater, such as the City of Kerman, are much less likely to experience water shortages than those agencies relying primarily on surface water. However, this reliability is not guaranteed and water supply shortages or interruptions can occur due to extended periods of drought or unexpected well failures, regional power outages, earthquakes, etc.

California Water Code Section 375 et. seq. permits public entities that supply water for retail purposes to adopt and enforce a water conservation program, with the intent of reducing the quantity of water used by people and to conserve the water supplies of the public entity. On February 3, 2010, the City of Kerman City Council adopted Resolution No. 10-05, establishing the City's WSCP, implementing mandatory prohibitions related to water conservation. The City adopted the Resolution based upon the need to conserve water supplies and to avoid or minimize the effects of a future water shortage. A copy of the City's WSCP is provided in Appendix I.

According to the Plan, responsive actions will become effective when the Director of Public Works declares that the City is unable to provide a sufficient water supply to meet demand, including insufficient supply for human consumptions, sanitation and fire protection. This response will be based on the Director's judgement as to the degree of the immediate or future water supply. When the Plan is in effect, no persons will knowingly use water or permit the use of water supplied by the City for commercial, industrial, agricultural, governmental or any other purpose in a manner contrary to the provisions of the Plan. At no time will water be wasted or used unreasonably.

The City's WSCP consist of a 3-stage water rationing plan to be enacted during a declared water shortage. The stages of the City's WSCP are as follows:

**I. Stage 1: Enforcement Required – Minor Shortage Potential:**

Stage 1 will be applied during periods when the City determines that water usage should be reduced by approximately 10 to 20 percent, in order to meet all of the water demands of its customers, either now or in the foreseeable future. Implementation of Stage 1 should result in a minimum of 10 percent reduction in water use from a base period determined at the time of declaration.

**II. Stage 2 Enforcement Required – Moderate Shortage Potential:**

Stage 2 will be applied during periods when the City determines that water usage should be reduced by approximately 20 to 35 percent, in order to meet all of the water demands of its customers now or in the foreseeable future. Implementation of Stage 2 should result in a minimum of 20 percent reduction in water used from a base period determined at the time of declaration.

**III. Stage 3 Enforcement Required – Critical Shortage Potential:**

Stage 3 will be applied during periods when the City determines that water usage should be reduced by approximately 35 to 50 percent, in order to meet all of the water demands of its customers now or in the foreseeable future. Implementation of Stage 3 should result in a minimum of 35 percent reduction in water used from a base period determined at the time of declaration.

Specific mandated restrictions in water use for Stages 1, 2, and 3 will be determined by the City Council and may include, but not be limited to the following:

1. Landscape (except residential) - Eliminate watering of ornamental turf areas. Water only actively used turf areas no more than twice per week. Trees and shrubs may be watered only twice per week using a hand-held hose with a positive shutoff nozzle or drip irrigation systems. Use of reclaimed water, however, is exempt.
2. Household and household members (residential landscapes) - Water no more than twice per week using only a hand-held hose with positive shutoff nozzle or drip irrigation systems. Eliminate sprinkler use.
3. Construction Usage - All construction water must be reclaimed or non-potable. Issuance of construction meters will be only for testing and disinfection of potable water lines.
4. Development Construction - Prior to the issuance of any building permit, the developer will be required to certify that a reduction (20 percent for Stage 1, 35 percent for Stage 2, and 50 percent for Stage 3) of the projected water usage for that development shall be achieved.

Table 8-1 summarizes the Stages of the City's current Water Conservation Program and the water supply condition that would determine when a particulate stage must be implemented.

**Table 8-1 Stages of Water Shortage Contingency Plan (Standard Table 8-1)**

Level	Complete Both	
	Percent Supply Reduction <sup>1</sup>	Water Supply Condition
1	10-20	❖ Below Average Precipitation for the last 12-24 months.

**Table 8-1 Stages of Water Shortage Contingency Plan (Standard Table 8-1)**

Level	Complete Both	
	Percent Supply Reduction <sup>1</sup>	Water Supply Condition
		<ul style="list-style-type: none"> <li>❖ 20 percent or more of municipal wells out of service.</li> <li>❖ Warm weather patterns typical of summer months.</li> </ul>
2	20-35	<ul style="list-style-type: none"> <li>❖ Below Average Precipitation for the last 24-36 months.</li> <li>❖ Prolonged periods of low water pressure.</li> <li>❖ 20 percent or more of municipal wells out of service.</li> <li>❖ Warm weather patterns typical of summer months.</li> </ul>
3	35-50	<ul style="list-style-type: none"> <li>❖ Below Average Precipitation for the last 36 months.</li> <li>❖ Prolonged periods of low water pressure.</li> <li>❖ 20 percent or more of municipal wells out of service.</li> <li>❖ Warm weather patterns typical of summer months.</li> </ul>

<sup>1</sup> One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.

Each stage includes a water reduction objective as a percentage of normal demand. The Plan is dependent on the cause, severity, and anticipated duration of the water supply shortage. Provisions of the City's WSCP applies to all water served to persons, customers and properties within the City's service area. A combination of voluntary and mandatory measures will be undertaken to reduce water usage to meet the reduction goals in the event of shortages.

### 8.3. Prohibitions on End Uses

**CWC 10632 (a)**

*(4) 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.*

*(5) 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.*

The City's WSCP contains provisions with regards to water conservation including prohibition on end uses during the various stages of water conservation. Table 8-2 lists the restriction on end uses at the various stages of water conservation.

**Table 8-2 Restrictions and Prohibitions on End Uses (Standard Table 8-2)**

Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement?
1	Landscape - Limit landscape irrigation to specific days	No watering on Mondays.	Yes
1	Landscape - Limit landscape irrigation to specific times	No watering any day between 6 a.m. and 8 a.m. or between 12 p.m. and 7 p.m.	Yes
1	Other	Outdoor watering must be used through hose and attended, or manually control.	Yes
1	Other	No wasting water intentionally.	Yes
1	Other - Prohibit use of potable water for washing hard surfaces	No street washing.	Yes
1	Other	Restrictions on carwashes and swimming pools.	Yes
2	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Only allowed at commercial establishments.	Yes
2	Landscape - Prohibit certain types of landscape irrigation	Landscape (except residential) to eliminate watering of ornamental turf.	Yes
2	Landscape - Limit landscape irrigation to specific days	Water only actively used turf no more than twice per week (except residential).	Yes
2	Landscape - Other landscape restriction or prohibition	Trees and shrubs may only be watered using a hand-held hose or drip irrigation system (except residential).	Yes
2	Landscape - Limit landscape irrigation to specific days	Residential landscapes to be watered only twice per week using only hand held hose	Yes
2	Other water feature or swimming pool restriction	Limit or prohibit pool and ornamental fountain refill.	Yes
3	Landscape - Prohibit all landscape irrigation	No landscape irrigation	Yes
3	Other - Prohibit use of potable water for construction and dust control	Non-potable water or reclaim on construction sites	Yes
3	Other	No new connection service	Yes

### **8.3.1. Landscape Irrigation**

Chapter 13.04, Section 160 of the Kerman Municipal Code describes the various violations that constitute as illegal water wasting. A copy of this section of the City's Municipal Code is provided in Appendix J. On September 7, 2016, the City Council adopted Resolution No. 16-58, which established the City's current landscape restrictions and set parameters for when such watering can take place. A copy of the adopted Resolution is provided in Appendix K.

The City currently requires all water users to abstain from all outdoor irrigations of lawns, gardens, landscaped areas, plants, trees, or other green-scape areas between 6:00 a.m. to 8:00 a.m. and between noon to 7:00 p.m. on any day. From March 2<sup>nd</sup> through November 30<sup>th</sup>, residents or occupants with addresses ending in an odd numbered are permitted to use water for outdoor purposes only on Tuesdays, Thursdays and Saturdays, while even numbered addresses are permitted to use water for outdoor purposes only on Wednesdays, Fridays and Sundays. No outdoor watering is permitted on Mondays.

From December 1<sup>st</sup> to March 1<sup>st</sup>, residents or occupants with addresses ending in an odd numbered are permitted to use water for outdoor purposes only on Tuesdays and Saturdays, while even numbered addresses are permitted to use water for outdoor purposes only on Wednesdays and Sundays. No outdoor watering is permitted on Mondays, Thursday and Friday. According to the Resolution, when the Winter Water Schedule is in effect, watering can be done any time of the day.

All City medians and parks that do not have a physical address are permitted to be watered according to the following schedule: Madera Avenue and areas to the east are to be watered following the same schedule as even numbered addresses, while all areas to the west of Madera Avenue are to be watered following the same schedule as odd numbered addresses. All outside use of water must be controlled by flow control devices or manual attendance. The City prohibits the use of unattended hoses or pipes for landscape irrigation.

When the City is in Stage 2 of the WSCP, watering of all ornamental turf areas, except residential, is prohibited. Actively used turf areas can be watered no more than twice per week, and trees and shrubs can only be water twice per week using a hand-held hose or drip irrigation. Also, residential landscape irrigation is limited to twice per week using a hand-held hose with a positive shutoff nozzle or drip irrigation system; the use of sprinklers is prohibited. Prohibitions during this stage of the WSCP do not include the use of reclaimed water for irrigation purposes. All landscape irrigation is prohibited in Stage 3 of the WSCP.

On July 6, 2016, the City Council adopted Ordinance 16-05, which repealed Chapter 13.06 of the Kerman Municipal Code and added a new Chapter 13.06. This new chapter adopted the Model Water Efficient Landscape Ordinance (MWELO) of the state of California by reference as set forth in Sections 49 through 495, Chapter 2.7, Division 2, of Title 23 of the CCR. A copy of this ordinance is provided in Appendix L.

### **8.3.2. Commercial, Industrial, Institutional (CII)**

According to Chapter 13.04, Section 160 of the Kerman Municipal Code, Water Wasting Violations, businesses which sell ready-to-eat foods, drinks or automotive fuels may use water for health and sanitary cleanup purposes only when mopping is inadequate. Washing down of driveways, parking lots, walks or

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paved areas at businesses is prohibited during April through October. The washing down of streets and gutters is prohibited year-round.

Beginning in Stage 2 of the City's WSCP, the washing of vehicles is permitted only at commercial establishments.

### **8.3.3. Water Features and Swimming Pools**

According to Chapter 13.04, Section 160 of the Kerman Municipal Code, swimming pools may occasionally be emptied for maintenance purposes that cannot be accomplished when the pool is full with water. A pool may not be emptied and refilled more than twice between May 1 and September 30. Frequent refilling will be considered a violation and subject to citations and surcharges in effect for water wasting. Pools must also be equipped with filtration systems in good working conditions. Beginning in Stage 2 of the City's WSCP, the refilling of pools is prohibited.

### **8.3.4. Defining Water Features**

#### *CWC 10632 (b)*

*Commencing with the urban water management plan update due July 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.*

#### *Health and Safety Code Section 115921*

*As used in this article the following terms have the following meanings:*

*(a) "Swimming pool" or "pool" means any structure intended for swimming or recreational bathing that contains water over 18 inches deep. "Swimming pool" includes in-ground and aboveground structures and includes, but is not limited to, hot tubs, spas, portable spas, and non-portable wading pools.*

The City limits or prohibits the refilling of ornamental fountains during Stage 2 of the WSCP.

### **8.3.5. Other**

The following prohibitions are contained in the Chapter 13.04, Section 160 of the Kerman Municipal Code:

- ❖ Washing house windows and vehicles is permissible if a water flow control device is attached to the end of the hose and water does not waste excessively onto the street or adjacent property.
- ❖ Washing down of exterior walls of buildings is permissible only for cleaning purposes in preparation for painting, stucco or other maintenance.
- ❖ Portable wading pools are allowed with adult supervision and no waste of water.
- ❖ No continuous flow of water is permissible for recreation activity.

The following prohibitions are contained in the City's WSCP:

- ❖ Prior to the issuance of any building permit, the developer will be required to certify that a reduction (20% for Stage 1, 35% for Stage 2, and 50% for Stage 3) of the projected water usage for that development shall be achieved.
- ❖ Beginning in Stage 3, all construction water must be reclaimed or no potable. Issuance of construction meters will be only for testing and disinfection of potable water lines.

## 8.4. Penalties, Charges, Other Enforcement of Prohibitions

*CWC 10632 (a)*

*(6) Penalties or charges for excessive use, where applicable.*

Chapter 13.04, Section 160 of the Kerman Municipal Code establishes the following penalties for water wasting and violations:

1. Any person violating this section of the Kerman Municipal Code shall be issued a warning citation.
2. Any person receiving three warning citations within twelve consecutive calendar months will be required by a resolution and an order of the Director of Public Works to install a water meter on the premises for which city water is requested, at violator's expense, as a condition precedent to continued water service.
3. Where a water meter already exists upon the premises, any person receiving a third citation within twelve consecutive calendar months shall be subjected to a fine in the amount of thirty dollars for the third violation and for each additional violation. The amount of any fine shall be added to and collected with the utility charges applicable to the property.

Violations of any provision in the City' WSCP are subject to the penalties specified in Title 13 of the Kerman Municipal Code.

## 8.5. Consumption Reduction Methods

### 8.5.1. Categories of Consumption Reduction Methods

Table 8-3 provides a summary of the consumption reduction methods that will be used by the City of Kerman. The consumption reduction methods in Table 8-3 come from the 2015 UWMP Guidebook for Urban Water Suppliers.

**Table 8-3 Stages of Water Shortage Contingency Plan - Consumption Reduction Methods  
(Standard Table 8-3)**

Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
1	Expand Public Information Campaign	
1	Increase Water Waste Patrols	
1	Reduce System Water Loss	
2	Expand Public Information Campaign	

**Table 8-3 Stages of Water Shortage Contingency Plan - Consumption Reduction Methods  
(Standard Table 8-3)**

Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
2	Increase Water Waste Patrols	
2	Reduce System Water Loss	
2	Decrease Line Flushing	
3	Expand Public Information Campaign	
3	Increase Water Waste Patrols	
3	Reduce System Water Loss	
3	Decrease Line Flushing	
3	Implement or Modify Drought Rate Structure or Surcharge	

Examples of specific actions that could fall into each category are discussed next. Where deemed helpful, comments regarding the City's specific implementations are also inserted into the suggested language from the State's publication.

- ❖ Expand Public Information Campaign- Begin or enlarge media campaign. Create bill insert with conservation information. Write articles for local newspaper. Conduct water efficiency workshops for different customer sectors.
- ❖ Improve Customer Billing- Increase billing frequency. Change format to report consumption in gallons per capita per day. Add information to the bill comparing the customer's use to similar customers.
- ❖ Offer Water Use Surveys- Actively reach out to high water users to offer water use surveys. Expand water use survey program to include new sectors.
- ❖ Provide Rebates or Giveaways of Plumbing Fixtures and devices- Implement new (toilet, clothes washer, etc....) rebate programs. Implement new (shower head, aerator, etc....) giveaway programs. The City will investigate funding sources and implementation of such programs over its next five-year water management planning cycle.
- ❖ Provide Rebates for Landscape Irrigation Efficiency - Implement a new landscape efficiency rebate program that provides rebates for landscape conversion, irrigation controllers, sprinkler heads, etc.... Funding for programs of this type has not been available. The City will investigate funding sources and implementation of such programs over its next five-year water management planning cycle.
- ❖ Decrease Line Flushing - Decrease the length of time for each line flushing. Decrease the frequency of line flushing.
- ❖ Reduce System Water Loss - Implement a water audit program and expand the leak repair program to control system losses.

- ❖ Increase Water Waste Patrols - Implement a Water Waste Patrol program. Increase staffing for Water Waste Patrol. Increase authority of Water Waste Patrol.
- ❖ Implement or Modify Drought Rate Structure or Surcharge - Implement a drought rate structure or modify a drought rate structure with a drought surcharge on all customers.

### **8.5.2. Rate Structures**

"Drought surcharges" are surcharges that are implemented in times of water shortage. A drought surcharge is different from a conservation rate structure, which is in place at all times. Agencies may choose to embed a drought rate structure within their conservation rate structure. The City does not currently have a drought surcharge rate ordinance; provisions to recover costs directly caused by the drought were not built into the City's base rates. The City intends to cover the costs for any drought related expenses and the shortage in revenues from operational reserves. If the duration of a drought period is such that reserves are exhausted the City may elect to implement a drought surcharge at that time.

It is an important water conservation strategy to set costs that recover the full water program costs. These costs include recharge and actions to sustain the groundwater basin that stores one hundred percent of the City's water supply. When these costs are ignored the price of water does not reflect its true costs. Traditional economic theories teach that any product that is underpriced will be subject to higher consumption demand than would be the case if fairly priced. This same principle seems to also apply to water.

As stated in Section 7.5, approximately 62 percent of the City's service connections are metered, while 38 percent of the connections remain unmetered. For metered connections, water use charges are based on the quantity of water used. The City's rate structure includes a monthly fixed service charge based upon the size of the customer's meter, in addition to a volumetric or commodity charge based upon the total volume of water consumed by a customer during the billing period. Under the current rate cost structure and assuming a monthly consumption of 16,000 gallons, 53 percent of the monthly residential is fixed while 47 percent is variable based on meter consumption charges. The City may elect in the future to further reduce the fixed amount in lieu of higher consumption charges.

For single family and multi-family residents and commercial users who are not metered, the City charges a flat rate fee. According to the Attachment A of Resolution 16-24 provided in Appendix M, single family residents and commercial users are charged a fee of \$30.28 each month and multi-family residents are charged \$24.73 per unit. By 2020 all customers should be metered and the flat rate fee will be eliminated.

### **8.6. Determining Reductions**

**CWC 10632(a)**

**(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.**

At a given water supply shortage level, customers will be required to reduce their water consumption by a specified percentage. Actual water restrictions are determined by comparing metered water consumption to the consumption during the same billing period in the last calendar year.

## 8.7. Revenue and Expenditure Impacts

*CWC 10632 (a)*

*(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), 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.*

A portion of Kerman's revenues come from volumetric water rates. Water sales revenues are charged at a rate of \$0.83/1,000 gal. As a result, Kerman's revenues vary depending on the stage of water conservation that they City is in. In dry years, local demands will decrease as a consequence of prohibitions on certain water uses, and Kerman may receive lower than anticipated revenues due to reduced sales volumes. In contrast, in wet years, demands increase as prohibitions are lifted, and revenues increase due to higher sales volumes.

Such revenue surpluses and shortages could cause instability in water rates. To mitigate this risk, Kerman maintains financial reserves, with a minimum and target balance, to stabilize water rates during times of reduced water sales. The reserves hold revenues collected during times of high water sales and are used to offset the need for revenues during times of low sales. To account for fluctuations, the City also typically adjusts rates on an annual basis.

## 8.8. Resolution or Ordinance

*CWC 10632 (a)(8)*

*A draft water shortage contingency resolution or ordinance.*

The City adopted Resolution No. 10-05 in February 2010. Resolution No. 10-05 established the City's WSCP and implemented mandatory prohibitions related to water conservation. The City adopted the Resolution based upon the need to conserve water supplies and to avoid or minimize the effects of a future water shortage. A copy of the City's WSCP is provided in Appendix I.

## 8.9. Catastrophic Supply Interruption

*CWC 10632*

*(a)(3) 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.*

This section of the UWMP identifies what actions will be taken by the City if there is a catastrophic reduction in water supplies. Catastrophic supply interruptions differ from the staged drought responses addressed earlier in this chapter in that catastrophic interruptions occur suddenly and can immediately jeopardize a large portion, or all, of the City's water supply. Catastrophic water shortages could occur as a result of earthquake damage, power outage, or water quality emergency.

The Public Works Director, acting as the Program Manager, will be responsible to assemble and oversee a water shortage management team that will include City staff members from public works, fire protection, planning, health, and emergency services. Actions and procedures for implementation during a catastrophic event will be developed and may include, but not be limited to, backup power generation, emergency deliveries of trucked and/or bottled water, temporary water storage for fire suppression, contamination isolation by partial system closure, etc. Table 8-4 summarizes the actions the City will take during a water supply catastrophe.

**Table 8-4 Preparation Actions for a Catastrophe**

Possible Catastrophe	Summary of Actions
Regional Power Outage	Request information from PG&E on estimated down time, if backup generation is available assess ability to supply fuel for extended periods. Notify affected users and issue "Boil Water" or "Do Not Drink" orders as needed.
Earthquake	Contact emergency assistance as necessary. Notify customers, media, state and local authorities if service is disrupted or significant demand management is necessary. Issue "Boil Water" or "Do Not Drink" orders as needed.
Flood	Contact local representative of National Weather Service for information on exact location and probable extent (stage) of flooding relative to utility facilities. Contact emergency assistance as necessary. Notify customers, media, state and local authorities if service is disrupted or significant demand management is necessary. Issue "Boil Water" or "Do Not Drink" orders as needed.
Water Supply Interruption	Depending on the percentage of water reduction needed (i.e. 10% to 50%), institute water prohibitions within water shortage contingency plan. Take action to provide alternate drinking water supply and fire protection including area water haulers, temporary storage options, etc. Issue "Boil Water" or "Do Not Drink" orders as needed.
Sabotage	Notify local law enforcement and Department of Homeland Security. Take actions to isolate portions of system containing suspect water. Issue "Boil Water" or "Do Not Drink" orders as needed. Take action to provide alternate drinking water supply and fire protection.

## 8.10. Minimum Supply Next Three Years

CWC 10632 (a) (2)

*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.*

The City relies solely on groundwater for its source of water supply and is therefore not subject to reduction in its water supply like communities that rely on surface water to meet all or a portion of their water demands.

As discussed in Section 4.2, because of large volumes of available groundwater and the fact that water levels are very stable in the subbasin and the Kerman area, it is anticipated that groundwater will be able to meet all the water supply needs of the City for the next 25 years and beyond, even in drought periods such as the severe one-year drought experienced in 1977 and the prolonged drought of 1987 to 1992. The City plans to have groundwater be its supply due to its availability even during extended drought periods. Table 8-5 displays the City's minimum groundwater supply over the next three years.

<b>Table 8-5 Minimum Supply Next Three Years (Standard Table 8-4)</b>			
	2016	2017	2018
Available Water Supply	933	970	1,007

## CHAPTER 9 DEMAND MANAGEMENT MEASURES

### 9.1. Introduction

Demand management measures (DMMs) are specific actions a water supplier takes to support its water conservation efforts. The goal of this Demand Management Measures (DMM) Chapter is to provide a comprehensive description of the water conservation programs that the City has implemented, is currently implementing, and plans to implement in order to meet its urban water use reduction targets.

The section of the CWC addressing DMMs was significantly modified in 2014, based on recommendations from the Independent Technical Panel (ITP) to the legislature. The ITP was formed by DWR to provide information and recommendations to DWR and the Legislature on new demand management measures, technologies and approaches to water use efficiency.

In its report to the Legislature, the ITP recommended that the UWMP Act should be amended to simplify, clarify, and update the DMM reporting requirements. The ITP recommended, and the legislature enacted, streamlining the retail agency requirements from 14 specific measures to six more general requirements plus an “other” category.

The City realizes the importance of DMMs to ensure a reliable future water supply. The City is committed to implementing water conservation programs to maximize sustainability in meeting future water needs for its customers. Due to the continued effective water conservation measures implemented by the City, the 2015 per capita water use has dropped to roughly 172 gallons per capita per day (GPCD) from 218 GPCD in 2010.

A description of the City’s DMMs follows.

### 9.2. Demand Management Measures for Retail Agencies

*CWC 10631 (f)*

*(1) (B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:*

- (i) Water waste prevention ordinances.*
- (ii) Metering.*
- (iii) Conservation pricing.*
- (iv) Public education and outreach.*
- (v) Programs to assess and manage distribution system real loss.*
- (vi) Water conservation program coordination and staffing support.*
- (vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.*

### **9.2.1. Water Waste Prevention Ordinance**

This DMM consists of adopting and enforcing a water waste ordinance that explicitly states that the waste of water is to be prohibited. The ordinance must prohibit specific actions that waste water, such as excessive runoff from landscape irrigation, or use of a hose outdoors without a shut off nozzle.

Chapter 13.04, Section 160 of the Municipal Code defines what actions, or lack thereof, constitute as water wasting and establishes penalties for violating the ordinance. Customers who violate the water waste prohibition ordinance will be issued a warning citation. Any customer who receives three warning citations within twelve consecutive calendar months will receive a fine of thirty dollars and be liable for the cost of installing a water meter on their premises, if they do not already have one.

The City has recently been more pro-active in response to water wasting. As part of the water conservation efforts the City has expanded its public outreach and education on water conservation and has increased enforcement of water waste prohibitions. The increased vigilance and enforcement by the City has been reflected in the per capita water use associated with residential users. The per capita water use has declined 19% from 212 GPCD in 2011 to 172 GPCD in 2015.

### **9.2.2. Metering**

#### **CWC 526**

*(a) Notwithstanding any other provisions of law, an urban water supplier that, on or after January 1, 2004, receives water from the Federal Central Valley Project under a water service contract or subcontract... shall do both of the following:*

*(1) On or before January 1, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings... located within its service area.*

#### **CWC 527**

*(a) An urban water supplier that is not subject to Section 526 shall do both the following:*

*(1) Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.*

This DMM requires that water meters be installed for all new connections to allow billing by volume of use. This program also applies to retrofitting any existing unmetered connections. The City of Kerman is currently executing a retrofit water meter installation program and has been requiring meter installation on all new construction as state law has mandated. According to 2015 records provided by the City, there are 3,479 connection accounts, of which, 2,172 are metered. Effective September 1, 2010, all metered accounts are billed according to their water usage. Accounts that are not metered continue to be billed a flat rate until a meter is installed.

The number of meters to be installed will vary year by year, depending on the availability of funds. Construction to fully meter all residential and commercial connections is estimated to be completed by July in 2017. Any remaining service connections will be metered by 2020.

### **9.2.3. Conservation Pricing**

As described above, approximately 62 percent of the City's service connections are metered, while 38 percent of the connections remain unmetered. On September 1, 2010, the City adopted commodity rates for metered customers. For service connections that are metered, the City charges customers based on the quantity of water used. The City's rate structure includes a monthly fixed service charge based upon the size of the customer's meter, in addition to a volumetric or commodity charge based upon the total volume of water consumed during a billing period. For example, single and multi-family residents currently pay a fixed rate of \$15.17 for a  $\frac{3}{4}$ " meter and a commodity charge of \$0.83/1000 gallons.

For those connections that are not metered, the City charges customers a flat rate fee. Each month, single family residents and commercial users are charged a fee of \$30.28 and multi-family residents are charged \$24.73 per unit. A copy of the City's new utility rates is provided in Appendix M. By 2020 all customers should be metered and the flat rate fee will be eliminated.

### **9.2.4. Public Education and Outreach**

The City distributes public information regarding water issues in mass mailings to all water service customers through the City's Internet website, directly to walk-in customers at City Hall, and at the Public Works Department. Also, when warranted, time-critical public information is dispersed through the local print media, radio station announcements and public events.

Water use regulations and the annual Drinking Water Consumer Confidence Report (water quality report) are mailed each year to all customers. The City takes advantage of these mailings when necessary to provide its customers additional information on water conservation and other demand management measures.

The City monthly water bill distributed to all water service customers is another vehicle used by the City for public education purposes. The bill mailing also contains Utility News Letters, which are used to remind customers of conservation and demand management measures.

### **9.2.5. Programs to Assess and Manage Distribution System Real Loss**

The City recognizes distribution system leakage can be a primary type of loss. While it is essential to control losses, the initial step is to assemble a water audit to identify the nature and volumes of losses and financial impacts that these losses exert. A water audit is a process of reviewing water use throughout a water system in order to quantify the volume of water not accounted for by the metering system of the water customers, which is typically the difference between metered well production, in the case of the City of Kerman, and metered usage on a system-wide basis.

As described in Section 4.4 of this 2015 UWMP, the City's unaccounted water volume for 2015 averaged approximately 15 percent of the total water produced. Since this UWMP estimated water usage of unmetered accounts and assumed that unmetered residential, commercial and City customers used water at the same rate as metered customers, a portion of the unaccounted water may include water that was delivered to unmetered customers and not included in the estimated amount provided in Section 4.3. The City is currently installing meters in all of the unmetered service connections and plans to have all connections metered by 2020.

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Once meter data is available from all of the service connections, the City will complete annual water audits to accurately quantify the volume of water loss. Leak detection programs will be implemented to locate and reduce water loss in the distribution system. The City is also planning to begin submitting American Water Works Association (AWWA) Stand Water Audit and Water Balance worksheets every year.

Currently, staff members monitor the City's water mains during daily activities, where they observe the condition of the pavement where water mains are known to be located. Leak detection of the water system is typically observed through localized deterioration of pavement adjacent to the problem water main.

### **9.2.6. Water Conservation Program Coordination and Staffing Support**

The City's Public Works Director is the designated Water Conservation Coordinator. In addition, the public works department staff supports the coordinator and the water conservation activities of the City and its customers. The Water Conservation Coordinator's responsibilities include:

- ❖ Coordination with internal City departments and the community at large to promote the principles of responsible water resources stewardship.
- ❖ Monitoring the practice and application of DMMs.
- ❖ Supervising the activities of the Water Patrol.
- ❖ Planning and participating in community water conservation education projects.

The Water Conservation Coordinator has the authorized use of City funds to support water conservation efforts. The water conservation activities are part of the full-time Public Works Director position, and the City does not track expenditures or time spent associated with water conservation activities separately within the budget for the position.

### **9.2.7. Other Demand Management Measures**

#### **9.2.7.1. Residential Plumbing Retrofit**

This program benefits existing customers by reducing their water consumption while minimizing the impact of their lifestyle. State legislation requires the installation of efficient plumbing in new construction, and effective 1994 requires that only Ultra Low Flush Toilets be sold in California.

Several studies suggest that savings resulting from miscellaneous interior retrofit fixtures can range between 25 and 65 gallons per day per housing unit. The studies also suggest that installation of retrofit fixtures in older single-family homes tend to produce more savings, while newer multi-family homes tend to produce less savings per housing unit.

Currently, the City does not have a program to retroactively replace plumbing fixtures and appliances for residential customers. The City performed an economic analysis on this program and concluded that it would have a low benefit-to-cost ratio. When more financing becomes available, the City may consider implementing this DMM.

### **9.2.7.2. High-Efficiency Washing Machine Rebate Program**

This program generally provides a financial incentive (rebate offer) to qualifying customers who install high efficiency washing machines in their home. From August 1, 2015, through March 30, 2016, the City offered a high efficiency (HE) washing machine rebate program to customers who replaced their high use washing machine with a HE machine. This program is no longer offered by the City. However, the City will seek grant funding when available to offer rebate programs to customers.

## **9.3. Implementation over the Past Five Years**

*CWC 10631*

*(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

*(1) (A) ... a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years.*

The following is a description of the water conservation efforts that the City has been implementing over the last five years:

### **I. Ordinance**

In 2010, the City adopted a Water Shortage Contingency Plan, which implemented mandatory prohibitions related to water conservation. The City adopted the Plan based upon the need to conserve water supplies and to avoid or minimize the effects of future water shortages. The City is currently in Stage 1 of the WSCP.

On July 6, 2016, the City adopted Ordinance No. 16-05, which revised Chapter 13.06 of Title 13 of the Kerman Municipal Code and adopted by reference the State Model Water Efficiency Landscape Ordinance. A copy of the Ordinance is provided in Appendix L.

On September 7, 2016, the City adopted No. 16-58, which established the City's current landscape restrictions and set parameters for when such watering can take place. A copy of the Resolution is provided in Appendix K.

### **II. Metering**

The City began a meter installation program in 2010. Currently, approximately 62 percent of City accounts are metered and billed on a usage basis. Construction to fully meter all residential and commercial connections is estimated to be completed by July in 2017. Any remaining service connections will be metered by 2020.

### **III. Conservation Pricing**

On June 1, 2016, the City adopted Resolution No. 16-24 approving an increase in water rates for both metered and unmetered customers by \$0.75 per month. Approximately one-third of the rate adjustment will be set aside for meter replacements, while two-thirds will cover ongoing

operational expenses. Additionally, the City increased the cost per 1,000 gallons, from \$0.81 to \$0.83.

IV. Public Education and Outreach

The programs described above and in Chapter 8 were either expanded or started in the last five years.

V. Water Distribution System Losses

The City will complete the installation of water meters at all connection within the next five years and begin auditing its water production and meter deliveries to ensure that leakage in the distribution system is maintained at low levels or further reduced. Currently, City staff monitors water mains during daily activities and observes the conditions of the pavement in places where water mains are known to be located.

VI. Water Conservation Program Coordination and Staffing Support

The City has enlisted the assistance of all staff in any City department that is in the field and residents for purposes of reporting running water or potential water waste. These outside working staff are to report such observations to water department staff.

#### **9.4. Planned Implementation to Meet Water Use Targets**

**CWC 10631**

*(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

*(1) (A) ...The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.*

As discussed just above, the City has implemented, either totally or in part, all of the demand management measures described in California Water Code 10631. The City will continue to install water meters on all unmetered services connections and plans to have all connections metered by 2020.

The City is on target to meet its target of 203 GPCD in 2020, having already exceeded its goal at the 2015 midpoint (achieved 172 GPCD versus the 226 GPCD 2015 goal). Although the City currently has a Self-Certified Conservation Target of 0%, the City continues to actively enforce their leak detection program and conservation watering schedule of two days per week and three days per week in the summer. It is likely that the City will continue to observe State 1 of the WSCP.

#### **9.5. Members of the California Urban Water Conservation Council**

**CWC 10631 (i)**

*For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivision (f) by*

*complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.*

In 1991 (amended September 16, 1999), an MOU regarding urban water conservation in California was made that formalizes an agreement between the Department of Water Resources (DWR), water utilities, environmental organizations, and other interested groups to implement DMMs and make a cooperative effort to reduce the consumption of California's water resources. This MOU is administered by the California Urban Water Conservation Council (CUWCC). The City of Kerman is a member of the CUWCC on and as a signatory to the MOU, the City is committed to reducing the per capita demand of its water customers.

As a member of the CUWCC, the City realizes the importance of the best management practices (BMPs) listed in the MOU in order to ensure a reliable future water supply. The City is committed to implementing water conservation programs to maximize sustainability in meeting future water needs for its customers. Due to the continued effective water conservation measures implemented by the City, the 2015 per capita water use has dropped to roughly 172 GPCD from 249 GPCD in 2005. Even though the City is already in compliance with their 2020 Confirmed Target of 203 GPCD, they will continue to monitor and adjust as necessary to this target in 2020.

## CHAPTER 10 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

### 10.1. Inclusion of all 2015 Data

This 2015 UWMP includes the water use and planning data for the entire year of 2015.

### 10.2. Notice of Public Hearing

Water suppliers must hold a public hearing prior to adopting the 2015 UWMP. The public hearing provides an opportunity for the public to provide input to the plan before it is adopted. The City Council shall consider all public input before the 2015 UWMP is adopted.

#### 10.2.1. Notice to Cities and Counties

*CWC 10621 (b)*

*Every urban water supplier required to prepare a plan shall... at least 60 days prior to the public hearing on the plan ... notify any city or county within which the supplier provides waters supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.*

*CWC 10642*

*The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.*

The City is the sole water supplier and water management agency for the area. For this reason, the City did not participate in an area, regional, watershed, or basin wide UWMP. While preparing the 2015 UWMP, however, the City coordinated its efforts with relevant agencies to ensure that the data and issues discussed in the plan are presented accurately.

The City provided formal written notification to County of Fresno that the City's 2015 UWMP was being prepared. Copies of the Notification letters are included in Appendix C. Copies of the final UWMP will be provided to Fresno County no later than 30 days after its submission to DWR.

#### 10.2.2. Notice to the Public

*CWC 10642*

*Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection ...*

*Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code.*

*Government Code 6066*

*Publication of notice pursuant to this section shall be once a week for two successive weeks. Two publications in a newspaper published once a week or oftener, with at least five days intervening between the respective publication dates not counting such publication dates, are sufficient. The period of notice commences upon the first day of publication and terminates at the end of the fourteenth day, including therein the first day.*

Copies of the City's draft UWMP were made available for public review at City Hall and the local public library in the City. The City noticed a public hearing to review and accept comments on the draft plan with more than two weeks in advance of the hearing. The notice of the public hearing was published in the local press and filed with the City Clerk. On \_\_\_\_\_, 2017, the City will hold a noticed public hearing to review and accept comments on the draft plan. Notice of the public hearing was published in the local press and a copy of the Notice of Public Hearing is included in Appendix N.

As required by the Act, the 2015 UWMP is being provided by the City to the California Department of Water Resources, the California State Library, and the public within 30 days of the City's adoption.

### **10.3. Public Hearing and Adoption**

*CWC 10642*

*Prior to adopting a plan, the urban water supplier ...shall hold a public hearing thereon.*

*CWC 10608.26*

*(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:*

- (1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.*
- (2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.*
- (3) Adopt a method, pursuant to subdivision (b) of Section 10608.20 for determining its urban water use target. (RETAIL AGENCIES ONLY)*

Pursuant to the requirements of the UWMPA, this section summarizes the adoption, submittal, and implementation of the City's 2015 UWMP.

#### **10.3.1. Adoption**

*CWC 10642*

*After the hearing, the plan shall be adopted as prepared or as modified after the hearing.*

The City prepared this 2015 UWMP during the end of 2016 and beginning of 2017. The plan was updated after the public hearing and adopted by its City Council on \_\_\_\_\_, 2017. A copy of the adopting resolution is provided in Appendix O.

<b>Table 10-1 Notification to Cities and Counties (Standard Table 10-1)</b>		
County Name	60 Day Notice	Notice of Public Hearing
Fresno County	☒	☒

## **10.4. Plan Submittal**

*CWC 10621(d)*

*An urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.*

*CWC 10644(a)*

*An urban water supplier shall submit to the department, 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.*

*CWC 10635 (b)*

*The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.*

### **10.4.1. Submitting a UWMP to DWR**

The City submitted the UWMP to the DWR on \_\_\_\_\_, 2017, using the electronic WUEdata submittal tool developed by DWR. A copy of the completion checklist is included in Appendix P.

### **10.4.2. Submitting UWMP to the California State Library**

Within 30 days of submitting the UWMP to DWR the adopted UWMP was made available for public review during normal business hours at the locations specified for the viewing of the Draft 2015 UWMP and copies of the UWMP were submitted to the California State Library and Fresno County.

### **10.4.3. Submitting UWMP to the Cities and Counties**

Within 30 days of submitting the UWMP to DWR the adopted UWMP was submitted to the County of Fresno.

## 10.5. Public Availability

*CWC 10645*

*Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.*

The adopted 2015 UWMP will be made available for public review at the City of Kerman City Hall and Department of Public Works. Public may review the 2015 UWMP during regular business hours. In addition, a copy of the 2015 UWMP will also be posted on the City's website.

## 10.6. Amending an Adopted Plan

*CWC 10621(c)*

*The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).*

*CWC 10644(a)*

*Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.*

If major changes are made to this 2015 UWMP, the City will hold an additional public hearing and City Council will readopt the plan.

**Appendix A**  
**URBAN WATER MANAGEMENT PLAN ACT**

**California Water Code Division 6, Part 2.6.**

**Chapter 1. General Declaration and Policy** §10610-10610.4

**Chapter 2. Definitions** §10611-10617

**Chapter 3. Urban Water Management Plans**

Article 1. General Provisions §10620-10621

Article 2. Contents of Plans §10630-10634

Article 2.5. Water Service Reliability §10635

Article 3. Adoption And Implementation of Plans §10640-10645

**Chapter 4. Miscellaneous Provisions** §10650-10656

## **Chapter 1. General Declaration and Policy**

### SECTION 10610-10610.4

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

- (1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.
- (2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.
- (3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.
- (4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.
- (5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.
- (6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.
- (7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

- (8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.
- (9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.
- (b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

- (a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.
- (b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
- (c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

## **Chapter 2. Definitions**

### **SECTION 10611-10617**

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses,

reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

## **Chapter 3. Urban Water Management Plans**

### **Article 1. General Provisions**

#### **SECTION 10620-10621**

10620. (a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall 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.

- (e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.
- (f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621. (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero, except as provided in subdivision (d).

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

(d) Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.

## **Article 2. Contents of Plan**

### **SECTION 10630-10634**

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter that shall do all of the following:

- (a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.
- (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 basins that 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.

(c) (1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

- (A) An average water year.
- (B) A single-dry water year.
- (C) Multiple-dry water years.

(2) 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.

- (d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.
- (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:
  - (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, or conjunctive use, or any combination thereof.
  - (I) Agricultural.
  - (J) Distribution system water loss.
- (2) The water use projections shall be in the same five-year increments described in subdivision (a).
- (3) (A) For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.
  - (B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.
- (4) (A) If available and applicable to an urban water supplier, water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:

- (i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.
- (ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

- (i) Water waste prevention ordinances.
- (ii) Metering.
- (iii) Conservation pricing.
- (iv) Public education and outreach.
- (v) Programs to assess and manage distribution system real loss.
- (vi) Water conservation program coordination and staffing support.
- (vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

(2) For an urban wholesale water supplier, as defined in Section 10608.12, a narrative description of the items in clauses (ii), (iv), (vi), and (vii) of subparagraph (B) of paragraph (1), and a narrative description of its distribution system asset management and wholesale supplier assistance programs.

(g) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water

use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

- (h) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
- (i) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivision (f) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.
- (j) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.1. (a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

10631.2. (a) In addition to the requirements of Section 10631, an urban water management plan may, but is not required to, include any of the following information:

- (1) An estimate of the amount of energy used to extract or divert water supplies.
- (2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.
- (3) An estimate of the amount of energy used to treat water supplies.
- (4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.
- (5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.
- (6) An estimate of the amount of energy used to place water into or withdraw from storage.
- (7) Any other energy-related information the urban water supplier deems appropriate.

(b) The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has

submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

- (i) Compliance on an individual basis.
- (ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

- (3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.
- (c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).
- (d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.
- (e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

10631.7. The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers, environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

10632. (a) The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

- (1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions that are applicable to each stage.
- (2) 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.
- (3) 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.
- (4) 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.
- (5) 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.

- (6) Penalties or charges for excessive use, where applicable.
- (7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), 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.
- (8) A draft water shortage contingency resolution or ordinance.
- (9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

(b) Commencing with the urban water management plan update due July 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

- (a) A description of 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.
- (b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.
- (c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
- (d) A description and quantification of 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.

- (e) 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 pursuant to this subdivision.
- (f) A description of 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.
- (g) 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.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

#### **Article 2.5. Water Service Reliability**

#### **SECTION 10635**

10635. (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.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

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

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

**Article 3. Adoption and Implementation of Plans**

**SECTION 10640-10645**

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the 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. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.

After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. (a) (1) An urban water supplier shall submit to the department, 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. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1) shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

(b) (1) Notwithstanding Section 10231.5 of the Government Code, the department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part.

The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

(2) A report to be submitted pursuant to paragraph (1) shall be submitted in compliance with Section 9795 of the Government Code.

(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section 10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

(2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).

(3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

## **Chapter 4. Miscellaneous Provisions**

### **SECTION 10650-10656**

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26

(commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

**Appendix B**  
**WATER CONSERVATION ACT (SB X7-7)**

**California Water Code Division 6, Part 2.55.**

- Chapter 1. General Declarations and Policy §10608-10608.8**
- Chapter 2. Definitions §10608.12**
- Chapter 3. Urban Retail Water Suppliers §10608.16-10608.44**
- Chapter 4. Agricultural Water Suppliers §10608.48**
- Chapter 5. Sustainable Water Management §10608.50**
- Chapter 6 Standardized Data Collection §10608.52**
- Chapter 7 Funding Provisions §10608.56-10608.60**
- Chapter 8 Quantifying Agricultural Water Use Efficiency §10608.64**

**Chapter 1. General Declarations and Policy**

**SECTION 10608-10608.8**

10608. The Legislature finds and declares all of the following:

- (a) Water is a public resource that the California Constitution protects against waste and unreasonable use.
- (b) Growing population, climate change, and the need to protect and grow California's economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.
- (c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.
- (d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve streamflows, and reduce greenhouse gas emissions.
- (e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.
- (f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.
- (g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.
- (h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.

(i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

10608.4. It is the intent of the Legislature, by the enactment of this part, to do all of the following:

- (a) Require all water suppliers to increase the efficiency of use of this essential resource.
- (b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.
- (c) Measure increased efficiency of urban water use on a per capita basis.
- (d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20-percent reduction.
- (e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.
- (f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.
- (g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.
- (h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.
- (i) Require implementation of specified efficient water management practices for agricultural water suppliers.
- (j) Support the economic productivity of California's agricultural, commercial, and industrial sectors.
- (k) Advance regional water resources management.

10608.8. (a) (1) Water use efficiency measures adopted and implemented pursuant to this part or Part 2.8 (commencing with Section 10800) are water conservation measures subject to the protections provided under Section 1011.

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision (b) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to

January 1, 2021. Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

- (3) To the extent feasible, the department and the board shall provide for the use of water conservation reports required under this part to meet the requirements of Section 1011 for water conservation reporting.
- (b) This part does not limit or otherwise affect the application of Chapter 3.5 (commencing with Section 11340), Chapter 4 (commencing with Section 11370), Chapter 4.5 (commencing with Section 11400), and Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code.
- (c) This part does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may have greater effects on water use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors.
- (d) The requirements of this part do not apply to an agricultural water supplier that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect. After the expiration of the Quantification Settlement Agreement, to the extent conservation water projects implemented as part of the Quantification Settlement Agreement remain in effect, the conserved water created as part of those projects shall be credited against the obligations of the agricultural water supplier pursuant to this part.

## Chapter 2 Definitions

### SECTION 10608.12

10608.12. Unless the context otherwise requires, the following definitions govern the construction of this part:

- (a) "Agricultural water supplier" means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. "Agricultural water supplier" includes a supplier or contractor for water, regardless of the basis of right, that distributes or sells water for ultimate resale to customers. "Agricultural water supplier" does not include the department.
- (b) "Base daily per capita water use" means any of the following:
  - (1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

- (2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.
- (3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.
- (c) "Baseline commercial, industrial, and institutional water use" means an urban retail water supplier's base daily per capita water use for commercial, industrial, and institutional users.
- (d) "Commercial water user" means a water user that provides or distributes a product or service.
- (e) "Compliance daily per capita water use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.
- (f) "Disadvantaged community" means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.
- (g) "Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:
  - (1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.
  - (2) The net volume of water that the urban retail water supplier places into long-term storage.
  - (3) The volume of water the urban retail water supplier conveys for use by another urban water supplier.
  - (4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.
- (h) "Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.
- (i) "Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.

- (j) "Interim urban water use target" means the midpoint between the urban retail water supplier's base daily per capita water use and the urban retail water supplier's urban water use target for 2020.
- (k) "Locally cost effective" means that the present value of the local benefits of implementing an agricultural efficiency water management practice is greater than or equal to the present value of the local cost of implementing that measure.
- (l) "Process water" means water used for producing a product or product content or water used for research and development, including, but not limited to, continuous manufacturing processes, water used for testing and maintaining equipment used in producing a product or product content, and water used in combined heat and power facilities used in producing a product or product content. Process water does not mean incidental water uses not related to the production of a product or product content, including, but not limited to, water used for restrooms, landscaping, air conditioning, heating, kitchens, and laundry.
- (m) "Recycled water" means recycled water, as defined in subdivision (n) of Section 13050, that is used to offset potable demand, including recycled water supplied for direct use and indirect potable reuse, that meets the following requirements, where applicable:
  - (1) For groundwater recharge, including recharge through spreading basins, water supplies that are all of the following:
    - (A) Metered.
    - (B) Developed through planned investment by the urban water supplier or a wastewater treatment agency.
    - (C) Treated to a minimum tertiary level.
    - (D) Delivered within the service area of an urban retail water supplier or its urban wholesale water supplier that helps an urban retail water supplier meet its urban water use target.
  - (2) For reservoir augmentation, water supplies that meet the criteria of paragraph (1) and are conveyed through a distribution system constructed specifically for recycled water.
- (n) "Regional water resources management" means sources of supply resulting from watershed-based planning for sustainable local water reliability or any of the following alternative sources of water:
  - (1) The capture and reuse of stormwater or rainwater.
  - (2) The use of recycled water.
  - (3) The desalination of brackish groundwater.

- (4) The conjunctive use of surface water and groundwater in a manner that is consistent with the safe yield of the groundwater basin.
- (o) "Reporting period" means the years for which an urban retail water supplier reports compliance with the urban water use targets.
- (p) "Urban retail water supplier" means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.
- (q) "Urban water use target" means the urban retail water supplier's targeted future daily per capita water use.
- (r) "Urban wholesale water supplier," means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.

## **Chapter 3 Urban Retail Water Suppliers**

### **SECTION 10608.16-10608.44**

10608.16.(a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.

- (b) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.

10608.20.(a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

- (2) It is the intent of the Legislature that the urban water use targets described in paragraph (1) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

- (b) An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

- (1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.
- (2) The per capita daily water use that is estimated using the sum of the following performance standards:

- (A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.
- (B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.
- (C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.

(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:

- (A) Consider climatic differences within the state.
- (B) Consider population density differences within the state.
- (C) Provide flexibility to communities and regions in meeting the targets.
- (D) Consider different levels of per capita water use according to plant water needs in different regions.
- (E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.
- (F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

(c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method

described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).

- (d) The department shall update the method described in paragraph (4) of subdivision (b) and report to the Legislature by December 31, 2014. An urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may adopt a new urban daily per capita water use target pursuant to this updated method.
- (e) An urban retail water supplier shall include in its urban water management plan due in 2010 pursuant to Part 2.6 (commencing with Section 10610) the 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.
- (f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.
- (g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).
- (h) (1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:
  - (A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.
  - (B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.
- (2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its Internet Web site, and make written copies available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.
- (i) (1) The department shall adopt regulations for implementation of the provisions relating to process water in accordance with subdivision (l) of Section 10608.12, subdivision (e) of Section 10608.24, and subdivision (d) of Section 10608.26.
- (2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the

Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

- (j) (1) An urban retail water supplier is granted an extension to July 1, 2011, for adoption of an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) due in 2010 to allow the use of technical methodologies developed by the department pursuant to paragraph (4) of subdivision (b) and subdivision (h). An urban retail water supplier that adopts an urban water management plan due in 2010 that does not use the methodologies developed by the department pursuant to subdivision (h) shall amend the plan by July 1, 2011, to comply with this part.  
(2) An urban wholesale water supplier whose urban water management plan prepared pursuant to Part 2.6 (commencing with Section 10610) was due and not submitted in 2010 is granted an extension to July 1, 2011, to permit coordination between an urban wholesale water supplier and urban retail water suppliers.

10608.22. Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph(3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

- 10608.24.(a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.  
(b) Each urban retail water supplier shall meet its urban water use target by December 31, 2020.  
(c) An urban retail water supplier's compliance daily per capita water use shall be the measure of progress toward achievement of its urban water use target.  
(d) (1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:
  - (A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.
  - (B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.
  - (C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.  
(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in

paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

- (e) When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.
- (f) (1) An urban retail water supplier that includes agricultural water use in an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) may include the agricultural water use in determining gross water use. An urban retail water supplier that includes agricultural water use in determining gross water use and develops its urban water use target pursuant to paragraph (2) of subdivision (b) of Section 10608.20 shall use a water efficient standard for agricultural irrigation of 100 percent of reference evapotranspiration multiplied by the crop coefficient for irrigated acres.  
(2) An urban retail water supplier, that is also an agricultural water supplier, is not subject to the requirements of Chapter 4 (commencing with Section 10608.48), if the agricultural water use is incorporated into its urban water use target pursuant to paragraph (1).

10608.26.(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

- (1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.
- (2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.
- (3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

(b) In complying with this part, an urban retail water supplier may meet its urban water use target through efficiency improvements in any combination among its customer sectors. An urban retail water supplier shall avoid placing a disproportionate burden on any customer sector.

(c) For an urban retail water supplier that supplies water to a United States Department of Defense military installation, the urban retail water supplier's implementation plan for complying with this part shall consider the conservation of that military installation under federal Executive Order 13514.

(d) (1) Any ordinance or resolution adopted by an urban retail water supplier after the effective date of this section shall not require existing customers as of the effective date of this section, to undertake changes in product formulation, operations, or equipment that would reduce process water use, but may provide technical assistance and financial incentives to those customers to implement efficiency measures for process water. This section shall not limit

an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

(2) This part shall not be construed or enforced so as to interfere with the requirements of Chapter 4 (commencing with Section 113980) to Chapter 13 (commencing with Section 114380), inclusive, of Part 7 of Division 104 of the Health and Safety Code, or any requirement or standard for the protection of public health, public safety, or worker safety established by federal, state, or local government or recommended by recognized standard setting organizations or trade associations.

10608.28.(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

- (1) Through an urban wholesale water supplier.
- (2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).
- (3) Through a regional water management group as defined in Section 10537.
- (4) By an integrated regional water management funding area.
- (5) By hydrologic region.
- (6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

10608.32. All costs incurred pursuant to this part by a water utility regulated by the Public Utilities Commission may be recoverable in rates subject to review and approval by the Public Utilities Commission, and may be recorded in a memorandum account and reviewed for reasonableness by the Public Utilities Commission.

10608.36. Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

10608.40. Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans

submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

10608.42.(a) The department shall review the 2015 urban water management plans and report to the Legislature by July 1, 2017, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets to achieve the 20-percent reduction and to reflect updated efficiency information and technology changes.

(b) A report to be submitted pursuant to subdivision (a) shall be submitted in compliance with Section 9795 of the Government Code.

10608.43. The department, in conjunction with the California Urban Water Conservation Council, by April 1, 2010, shall convene a representative task force consisting of academic experts, urban retail water suppliers, environmental organizations, commercial water users, industrial water users, and institutional water users to develop alternative best management practices for commercial, industrial, and institutional users and an assessment of the potential statewide water use efficiency improvement in the commercial, industrial, and institutional sectors that would result from implementation of these best management practices. The taskforce, in conjunction with the department, shall submit a report to the Legislature by April 1, 2012, that shall include a review of multiple sectors within commercial, industrial, and institutional users and that shall recommend water use efficiency standards for commercial, industrial, and institutional users among various sectors of water use. The report shall include, but not be limited to, the following:

- (a) Appropriate metrics for evaluating commercial, industrial, and institutional water use.
- (b) Evaluation of water demands for manufacturing processes, goods, and cooling.
- (c) Evaluation of public infrastructure necessary for delivery of recycled water to the commercial, industrial, and institutional sectors.
- (d) Evaluation of institutional and economic barriers to increased recycled water use within the commercial, industrial, and institutional sectors.
- (e) Identification of technical feasibility and cost of the best management practices to achieve more efficient water use statewide in the commercial, industrial, and institutional sectors that is consistent with the public interest and reflects past investments in water use efficiency.

10608.44. Each state agency shall reduce water use at facilities it operates to support urban retail water suppliers in meeting the target identified in Section 10608.16.

## Chapter 4 Agricultural Water Suppliers

### SECTION 10608.48

10608.48.(a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c).

(b) Agricultural water suppliers shall implement all of the following critical efficient management practices:

(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).

(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.

(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:

(1) Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage.

(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.

(3) Facilitate the financing of capital improvements for on-farm irrigation systems.

(4) Implement an incentive pricing structure that promotes one or more of the following goals:

(A) More efficient water use at the farm level.

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.

(5) Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.

- (6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.
- (7) Construct and operate supplier spill and tailwater recovery systems.
- (8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.
- (9) Automate canal control structures.
- (10) Facilitate or promote customer pump testing and evaluation.
- (11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.
- (12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:
  - (A) On-farm irrigation and drainage system evaluations.
  - (B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.
  - (C) Surface water, groundwater, and drainage water quantity and quality data.
  - (D) Agricultural water management educational programs and materials for farmers, staff, and the public.
- (13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.
- (14) Evaluate and improve the efficiencies of the supplier's pumps.

(d) Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) a report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.

(e) The data shall be reported using a standardized form developed pursuant to Section 10608.52.

(f) An agricultural water supplier may meet the requirements of subdivisions (d) and (e) by submitting to the department a water conservation plan submitted to the United States Bureau of Reclamation that meets the requirements described in Section 10828.

- (g) On or before December 31, 2013, December 31, 2016, and December 31, 2021, the department, in consultation with the board, shall submit to the Legislature a report on the agricultural efficient water management practices that have been implemented and are planned to be implemented and an assessment of the manner in which the implementation of those efficient water management practices has affected and will affect agricultural operations, including estimated water use efficiency improvements, if any.
- (h) The department may update the efficient water management practices required pursuant to subdivision (c), in consultation with the Agricultural Water Management Council, the United States Bureau of Reclamation, and the board. All efficient water management practices for agricultural water use pursuant to this chapter shall be adopted or revised by the department only after the department conducts public hearings to allow participation of the diverse geographical areas and interests of the state.
- (i)
  - (1) The department shall adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirement in paragraph (1) of subdivision (b).
  - (2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

## Chapter 5 Sustainable Water Management

### Section 10608.50

10608.50.(a) The department, in consultation with the board, shall promote implementation of regional water resources management practices through increased incentives and removal of barriers consistent with state and federal law. Potential changes may include, but are not limited to, all of the following:

- (1) Revisions to the requirements for urban and agricultural water management plans.
- (2) Revisions to the requirements for integrated regional water management plans.
- (3) Revisions to the eligibility for state water management grants and loans.

- (4) Revisions to state or local permitting requirements that increase water supply opportunities, but do not weaken water quality protection under state and federal law.
- (5) Increased funding for research, feasibility studies, and project construction.
- (6) Expanding technical and educational support for local land use and water management agencies.

(b) No later than January 1, 2011, and updated as part of the California Water Plan, the department, in consultation with the board, and with public input, shall propose new statewide targets, or review and update existing statewide targets, for regional water resources management practices, including, but not limited to, recycled water, brackish groundwater desalination, and infiltration and direct use of urban stormwater runoff.

## Chapter 6 Standardized Data Collection

### SECTION 10608.52

10608.52.(a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.

(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24 and an agricultural water supplier's compliance with implementation of efficient water management practices pursuant to subdivision (a) of Section 10608.48. The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

## Chapter 7 Funding Provisions

### Section 10608.56-10608.60

10608.56.(a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(b) On and after July 1, 2013, an agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

- (c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.
- (d) Notwithstanding subdivision (b), the department shall determine that an agricultural water supplier is eligible for a water grant or loan even though the supplier is not implementing all of the efficient water management practices described in Section 10608.48, if the agricultural water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the efficient water management practices. The supplier may request grant or loan funds to implement the efficient water management practices to the extent the request is consistent with the eligibility requirements applicable to the water funds.
- (e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.
- (f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 10800), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).

10608.60.(a) It is the intent of the Legislature that funds made available by Section 75026 of the Public Resources Code should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for grants to implement this part. In the allocation of funding, it is the intent of the Legislature that the department give consideration to disadvantaged communities to assist in implementing the requirements of this part.

(b) It is the intent of the Legislature that funds made available by Section 75041 of the Public Resources Code, should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for direct expenditures to implement this part.

## **Chapter 8 Quantifying Agricultural Water Use Efficiency**

### **SECTION 10608.64**

10608.64. The department, in consultation with the Agricultural Water Management Council, academic experts, and other stakeholders, shall develop a methodology for quantifying the efficiency of agricultural water use. Alternatives to be assessed shall include, but not be limited to, determination of efficiency levels based on crop type or irrigation system distribution uniformity. On or before December 31, 2011, the department shall report to the Legislature on a proposed methodology and a plan for implementation. The plan shall include the estimated implementation costs and the types of data needed to support the methodology. Nothing in this section authorizes the department to implement a methodology established pursuant to this section.

**Appendix C**  
**NOTIFICATION LETTERS**



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## Notice of Preparation **City of Kerman 2015 Urban Water Management Plan**

In accordance with the Urban Water Management Planning Act (California Water Code Sections 10610 to 10657), urban water suppliers are required to prepare an Urban Water Management Plan (UWMP) and update it every five years. The City of Kerman (City) is preparing the 2015 UWMP for submission to the California Department of Water Resources (DWR).

We invite your participation in this process. A Draft of the 2015 UWMP will be made available for public review within the next few months. A Notice of Availability for Public Review for the 2015 UWMP will be posted sixty (60) days prior to a Public Hearing to be held by the City Council.

If you would like more information regarding the City of Kerman 2015 UWMP please contact:

Ken Moore  
Public Works Director  
City of Kerman  
850 S. Madera Avenue  
Kerman, CA 93630  
e-mail: [kmoore@cityofkerman.org](mailto:kmoore@cityofkerman.org)

Sincerely,  
  
Ken Moore  
Public Works Director

**PUBLIC WORKS DEPARTMENT**

Ken Moore, Director

Mayor – Stephen B. Hill

**Council Members**

Gary Yep

Rhonda Armstrong

Kevin Nehring

Bill Nijjer



850 S. Madera Avenue

KERMAN, CA 93630

Phone: (559) 846-9343

Fax: (559) 846-7488

[www.cityofkerman.net](http://www.cityofkerman.net)

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November 8, 2016

Bill Stretch

North Kings Groundwater Sustainability Agency

2907 S. Maple Avenue

Fresno, CA 93725

**RE: Notice of Preparation for City of Kerman 2015 Urban Water Management Plan  
City of Kerman**

In accordance with the Urban Water Management Planning Act (California Water Code Sections 10610 to 10657), urban water suppliers are required to prepare an Urban Water Management Plan (UWMP) and update it every five years. The City of Kerman (City) is preparing the 2015 UWMP for submission to the California Department of Water Resources (DWR).

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Ken Moore

Public Works Director

City of Kerman

850 S. Madera Avenue

Kerman, CA 93630

e-mail: [kmoore@cityofkerman.org](mailto:kmoore@cityofkerman.org)

Sincerely,

Ken Moore

Public Works Director

**PUBLIC WORKS DEPARTMENT**

Ken Moore, Director

**Mayor – Stephen B. Hill**

**Council Members**

Gary Yep

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November 8, 2016

Gary Serrato  
General Manager  
Fresno Irrigation District  
2907 S. Maple Avenue  
Fresno, CA 93725

**RE: Notice of Preparation for City of Kerman 2015 Urban Water Management Plan  
City of Kerman**

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City of Kerman  
850 S. Madera Avenue  
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e-mail: [kmoore@cityofkerman.org](mailto:kmoore@cityofkerman.org)

Sincerely,

Ken Moore  
Public Works Director

**PUBLIC WORKS DEPARTMENT**  
Ken Moore, Director

**Mayor** – Stephen B. Hill  
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---

November 8, 2016

Eric Osterling  
Program Manager  
Kings Basin Water Authority  
4886 E. Jensen Avenue  
Fresno, CA 93725

**RE: Notice of Preparation for City of Kerman 2015 Urban Water Management Plan  
City of Kerman**

In accordance with the Urban Water Management Planning Act (California Water Code Sections 10610 to 10657), urban water suppliers are required to prepare an Urban Water Management Plan (UWMP) and update it every five years. The City of Kerman (City) is preparing the 2015 UWMP for submission to the California Department of Water Resources (DWR).

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Sincerely,

  
Ken Moore  
Public Works Director

**PUBLIC WORKS DEPARTMENT**

Ken Moore, Director

**Mayor – Stephen B. Hill****Council Members**

Gary Yep

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850 S. Madera Avenue

KERMAN, CA 93630

Phone: (559) 846-9343

Fax: (559) 846-7488

[www.cityofkerman.net](http://www.cityofkerman.net)**November 8, 2016****Bernard Jimenez****Deputy Director of Planning****County of Fresno****Department of Public Works and Planning****2220 Tulare Street, 6<sup>th</sup> Floor****Fresno, CA 93721****RE: Notice of Preparation for City of Kerman 2015 Urban Water Management Plan****City of Kerman**

In accordance with the Urban Water Management Planning Act (California Water Code Sections 10610 to 10657), urban water suppliers are required to prepare an Urban Water Management Plan (UWMP) and update it every five years. The City of Kerman (City) is preparing the 2015 UWMP for submission to the California Department of Water Resources (DWR).

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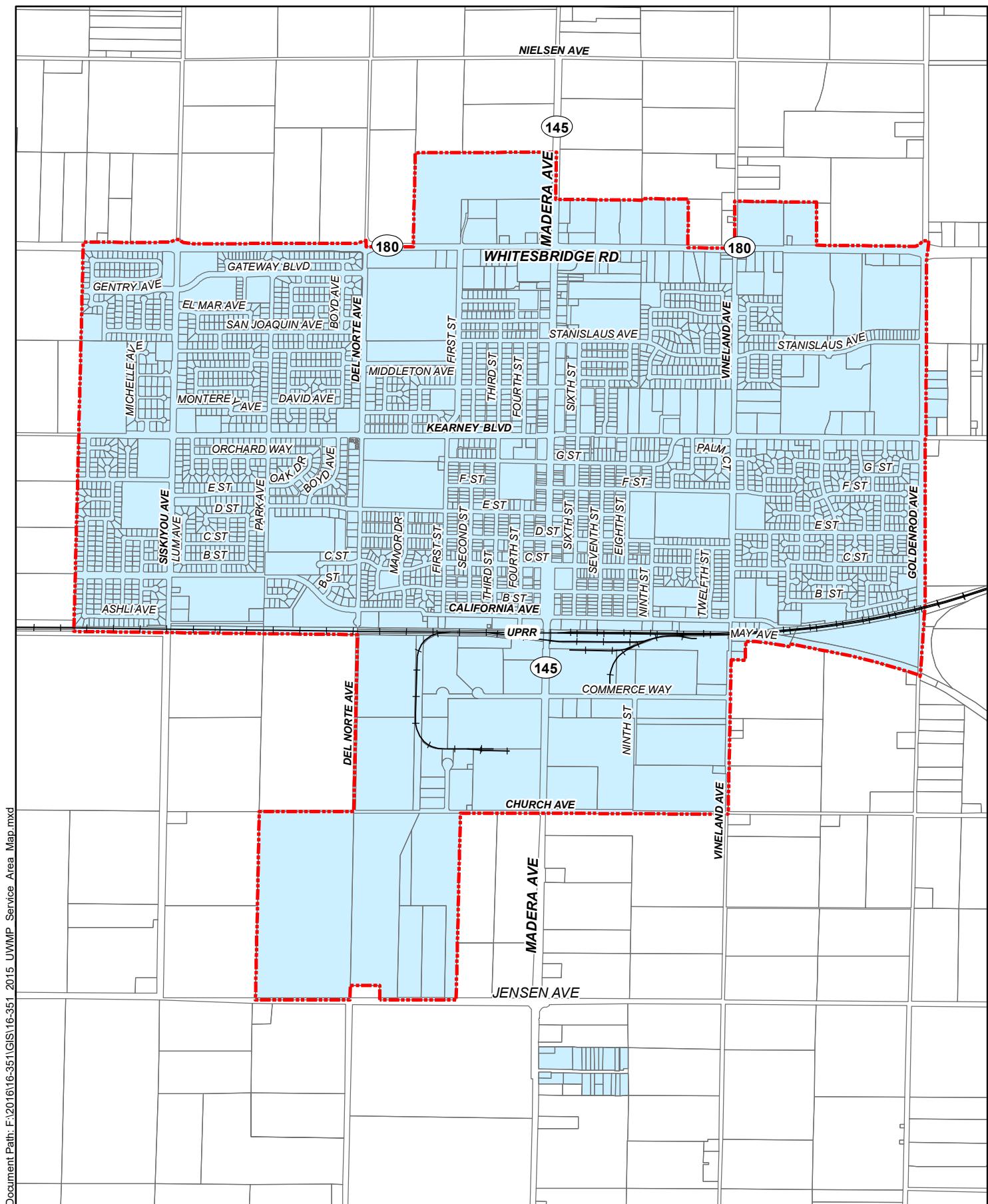
If you would like more information regarding the City of Kerman 2015 UWMP please contact:

**Ken Moore****Public Works Director****City of Kerman****850 S. Madera Avenue****Kerman, CA 93630****e-mail: [kmoore@cityofkerman.org](mailto:kmoore@cityofkerman.org)****Sincerely,****Ken Moore****Public Works Director**

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**“COMMUNITY COMES FIRST”**

**Appendix D**  
**SERVICE AREA MAP**



City Limits



Potable Water Service Area

**2015 UWMP  
Service Area Map**



0 900 1,800  
Feet

**Appendix E**  
**CLIMATE CHANGE VULNERABILITY ASSESSMENT**

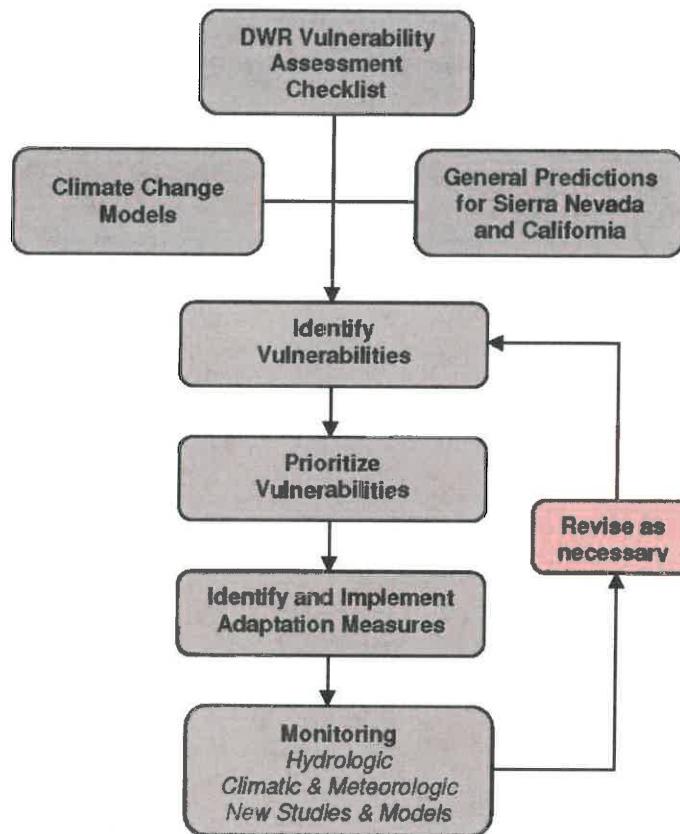
## 17 CLIMATE CHANGE

### 17.1 Introduction

Climate change is a long-term alteration in global weather patterns such as precipitation, temperature, wind and severe weather events. Climate change can occur from both natural and anthropogenic effects. Scientists believe that a primary driver of climate change is greenhouse gas concentrations, including methane and carbon dioxide. Anthropogenic release of these gases is expected to accelerate the rate of natural climate change. Paleoclimatic evidence, such as ice cores, lake varves, and tree rings show a direct correlation between greenhouse gas concentrations and global temperatures (Ruddiman, 2002). There is broad scientific agreement that climate change is occurring and that emissions of heat-trapping gases are the primary cause.

Climate change impacts in the Kings Basin cannot be precisely predicted, but if they occur, they could include different precipitation patterns and river flows, higher temperatures, and earlier snowmelt. The California Department of Water Resources (DWR) recognizes that current climate change projections are not precise, but they require that climate change planning be incorporated into Integrated Regional Water Management Plans (IRWMPs). Further, due to the uncertainty in predictions, water managers should prepare for a range of future conditions.

The general strategy to plan for climate change in the Kings Region includes: 1) identify vulnerabilities 2) implement adaptation measures; and 3) monitor for climate change. This planning process is shown in **Figure 17-1**.



**Figure 17-1: Process for Climate Change Planning**

Specific topics addressed in this section include: climate change literature, general impacts from climate change, a vulnerability assessment for the Kings Basin, climate change modeling results, adaptation measures, climate change monitoring, and consideration of greenhouse gas emissions in the project review process.

## 17.2 Literature Review

Numerous documents were used to evaluate climate change in the Kings Basin. The primary document was the *Climate Change Handbook for Regional Water Planning*, (DWR and EPA, 2011). This handbook is the most recent, practical climate change document published by the DWR, and provides numerous tools for addressing climate change. This document is not required for preparing IRWMPs; however, DWR does recommend that it be used.

Other important climate change documents that were used include California Natural Resources Agency (2009), California State University at Fresno (2008), Conrad (2012), Climatewise (2010), DWR (October 2008), and U.S. Global Change Research Program

(2009). Lastly, several reports that describe climate change modeling results were reviewed. These are discussed in Section 17.5.

Several local water and land use plans address climate change. The climate change goals and policies in these plans are consistent with this IRWMP. For example, the General Plans for the City of Selma, Tulare County and Kings County outline numerous climate change mitigation measures such as energy efficiency requirements at new developments, compact urban development, and promoting development of renewable energy. The City of Clovis Urban Water Management Plan proposes water conservation measures to reduce energy demands and mitigate for climate change. The City of Fresno Metropolitan Water Resources Management Plan (2007) identifies a need for more flood control space to address more frequent flood flows caused by climate change. The City of Fresno also assumes a ten percent decrease in Kings River and San Joaquin River water supplies to Fresno from climate change impacts, although there is no specific basis used to determine this number. Climate change is missing from many older planning documents; however, it is being addressed in most new planning efforts.

### 17.3 General Impacts from Climate Change

This section discusses potential general impacts from climate change on the Kings Basin. Specific impacts are uncertain, but it is generally agreed that the climate will warm and have a variety of impacts on precipitation, hydrology, and the ecosystem. Some of the potential climate change impacts listed by DWR (Oct. 2008), California Natural Resources Agency (2009) and the U.S. Global Change Research Program (June 2009) include:

#### Precipitation

- Changes in the seasonality of precipitation
- Increase in frequency and intensity of droughts
- More precipitation and less snowfall, resulting in less water stored in the snowpack
- Increased frequency of rain-on-snow events
- Changes in temperatures and cloud cover that inhibit or prevent cloud seeding
- Lower overall precipitation and increased aridity

#### Streamflow

- Changes in the timing of spring runoff
- Increased flood risk, creating conflicts between water storage and flood control

#### Water Demands

- Higher temperatures leading to higher evapotranspiration rates from plants, soils and open water surfaces

- Extended growing seasons resulting in higher evapotranspiration for urban landscape and permanent crops

### Water Quality

- Higher water temperatures leading to fish distress and algae growth
- Changes in erosion patterns resulting from changes in runoff and overland flow

### Other

- Increased fire risk to rangeland and forests
- Potential for increase in diseases, pest invasions and weed invasions
- Heat waves and crop stress leading to lower crop yield
- Overall geographic changes in distribution of flora and fauna

The California water system is especially vulnerable to climate change due to its dependence on mountain snow accumulation and snowmelt processes. Sierra snow is the largest water reservoir in California, and is an important storage mechanism for the Kings Basin. Earlier peak runoff, more intense storms that quickly wash through the system, and lower snowpack levels could all contribute to lower water availability, and increased demand on groundwater.

Predicted changes in precipitation vary, but most predictions include a reduction in overall moisture. For example, Koopman et al. (2010) states that six climate change models described in several California Energy Commission reports showed a drier climate for Central California. On the other hand, California State University at Fresno (2008) states that global climate change models suggest near similar precipitation regimes but with a potential variation of 15-25%. Bashford et al. evaluated two climate change scenarios, including one wet scenario and one dry scenario. The purpose of listing these different predictions is not to throw doubt onto climate change science, but rather show that some uncertainty exists, and water managers should therefore plan for a range of conditions.

Climate change could also have some positive impacts including less frost damage to crops, longer agricultural growing seasons, and less demand for winter heat. However, the Kings Basin water system is designed for a specific climate, and warmer temperatures will generally be detrimental since they will increase water demands and reduce snowpack storage in a water-short area. The risks to the region from no action are clear and include a reduction in available water supply, greater groundwater overdraft, urban water shortages, higher water costs, and lower agricultural output.

### **17.4 Vulnerability Assessment**

A local vulnerability assessment was performed using the 'Vulnerability Assessment Checklist' found in the *Climate Change Handbook for Regional Water Planning* (DWR and EPA, 2011). This checklist, provided below, evaluates vulnerabilities to water

demand, water supply, water quality, flooding, ecosystems and habitats, and hydropower from potential climate change.

## **1. Water Demand**

### ***1.a - Are there major industries that require cooling/process water in your planning region?***

The region includes a large number of fruit, vegetable, and meat processing plants, but the temperature of the process water is not likely a major factor. The Kings River Conservation District (KRCD) operates a natural gas peaking powerplant (Malaga Peaking Plant) in the area, but cooling water is provided entirely from groundwater. No other major thermal powerplants are located in the region.

### ***1.b - Does water use vary by more than 50% seasonally in parts of your region?***

Seasonal water use varies substantially (greater than 50%) in the region. The majority of water is used in the summer for crop irrigation and some landscape irrigation. Water demands are very low in the winter when much of the farmland is idle, most permanent crops are dormant, and effective precipitation provides most of the needed moisture. Approximately one-third of urban water demands occur in the winter with the other two-thirds in the summer.

### ***1.c - Are crops grown in your region climate-sensitive? Would shifts in daily heat patterns, such as how long heat lingers before night-time cooling, be prohibitive for some crops?***

The region experiences hot dry summers, and, as a result, most of the crops grown have a relatively good resistance to heat. Changes in heat patterns would probably only impact crop yields if there is a significant increase in temperature. Changes in heat patterns could increase the demand for crop irrigation water. Although freezing temperatures do harm some crops, they are beneficial to some permanent crops that need a certain number of chilling hours below freezing for an effective dormancy. Freezing temperatures also kill some types of pests. Therefore, a reduction in the number of freezing days could negatively impact some crops.

### ***1.d - Do groundwater supplies in your region lack resiliency after drought events?***

Groundwater provides an important supplement to surface water in the Kings Basin. Groundwater is used to meet demands not met by surface water, and the demand for groundwater increases during droughts. The region has experienced several severe droughts and the groundwater supply has proven resilient, although there is generally still a steady decline in groundwater levels due to long-term overdraft.

**1.e - Are water use curtailment measures effective in your region?**

Surface water curtailments include urban water conservation measures and reductions in surface water allocations. Historically, water users have been able to supplement surface water supplies with groundwater, resulting in few water shortages. However, if groundwater levels continue to decline then groundwater will become less reliable as a backup supply. The area has a hardened demand due to a large number of permanent plantings, so new water conservation programs may have to be implemented in the future if less surface water is available.

**1.f - Are some instream flow requirements in your region either currently insufficient to support aquatic life, or occasionally unmet?**

Minimum in-stream flow requirements are almost always met. These flows have the highest priority for the surface waters, and flows would be insufficient only in an extreme drought.

## **2. Water Supply**

**2.a - Does a portion of the water supply in your region come from snowmelt?**

Yes, most of the surface water comes from snowmelt in the Sierra Nevada Mountains. This surface water is used throughout the region. Therefore, the Kings Basin is vulnerable to potential climate change impacts on snow including earlier spring runoffs, less water storage as snowpack, and more frequent rain-on-snow events that could cause flood releases out of reservoirs.

**2.b - Does part of your region rely on water diverted from the Delta, imported from the Colorado River, or imported from other climate-sensitive systems outside your region?**

A small portion of the Kings Basin, including James Irrigation District, Tranquillity Irrigation Districts, and Fresno Slough Water District, use Delta water as a portion of their water supply. However, as part of their water contracts, these districts can receive San Joaquin River water in place of Delta water if Delta water is not available.

**2.c - Does part of your region rely on coastal aquifers? Has salt intrusion been a problem in the past?**

No, the region does not rely on coastal aquifers.

***2.d - Would your region have difficulty in storing carryover supply surpluses from year to year?***

The local reservoirs have some capacity to store carryover water from year to year without encroaching on flood control space. The space to store the water, and ability to keep it in storage, depends on the hydrology. In some years, agencies can carryover water and in other years they cannot. Additional carryover storage capacity would be welcomed by the local water agencies. The region does have very large sub-surface storage capacity. New groundwater banks are needed to further utilize this underground storage space.

***2.e - Has your region faced a drought in the past during which it failed to meet local water demands?***

Surface water supplies are reduced during droughts, but groundwater is generally used to meet shortfalls, in addition to some urban water conservation. As a result, almost all water demands have been met in past droughts. If groundwater levels continue to decline, then it may not be a reliable backup supply in the future and some demands may not be met.

***2.f - Does your region have invasive species management issues at your facilities, along conveyance structures, or in habitat areas?***

Some invasive plant species can clog natural channels and canals if they are not properly managed, so most agencies include this as part of their maintenance activities. Agencies in the area have been alerted to the potential for invasive species such as quagga mussels and how to help prevent their spread.

### **3. Water Quality**

***3.a - Are increased wildfires a threat in your region? If so, does your region include reservoirs with fire-susceptible vegetation nearby which could pose a water quality concern from increased erosion?***

No reservoirs are located in the Kings Basin itself, but several reservoirs are found in the watersheds that provide surface water to the region. Vegetation surrounds these reservoirs, but it is generally sparse in the immediate vicinity of the larger reservoirs and would not pose a large water quality concern from increased erosion. Some reservoirs at higher elevations have thick forest on the reservoir rim, or are located in steeper terrain where post-fire erosion could potentially affect water quality.

***3.b - Does part of your region rely on surface water bodies with current or recurrent water quality issues related to eutrophication, such as low dissolved oxygen or algal blooms? Are there other water quality constituents potentially exacerbated by climate change?***

Warmer water could cause conditions that lead to eutrophication. However, the surface waters in the region, Kings River and San Joaquin River, are derived from Sierra snowmelt, and are cold and very pure. These waters have few nutrients that support algae growth and it is generally not a problem. However, algae is a problem in the canals that carry Kings River water to treatment facilities and can become a problem during very low flows at the distal end of the rivers.

***3.c - Are seasonal low flows decreasing for some waterbodies in your region? If so, are the reduced low flows limiting the waterbodies' assimilative capacity?***

No decreases in low flows for the local water bodies have been observed, although no detailed analysis has been performed. Changes in annual low flows from climate change would be difficult to identify since low flows already vary due to natural climate variations and management of reservoir releases.

***3.d - Are there beneficial uses designated for some water bodies in your region that cannot always be met due to water quality issues?***

Local surface water supplies are able to meet all beneficial uses, which include recreation, hydropower, aquatic habitat, irrigation, and municipal water use. However, operational adjustments are often made to improve water quality for fish. Groundwater quality varies throughout the region and is not suitable for municipal use in some areas. Groundwater quality may degrade further as groundwater levels continue to decline.

***3.e Does part of your region currently observe water quality shifts during rain events that impact treatment facility operation?***

Yes, even though surface waters in the region generally have excellent water quality, storm activity can cause very high turbidity spikes that can affect the operation of surface water treatment facilities.

## **4. Sea Level Rise**

The Kings Basin is at an average elevation of about 300 feet above mean sea level and is approximately 100 miles from the ocean. Therefore, sea level rise is not a threat to the region.

## **5. Flooding**

**5.a - Does critical infrastructure in your region lie within the 200-year floodplain?**  
DWR's best available floodplain maps are available at:  
[http://www.water.ca.gov/floodmgmt/lrafmo/fmb/fes/best\\_available\\_maps/](http://www.water.ca.gov/floodmgmt/lrafmo/fmb/fes/best_available_maps/).

Most of the floodplains in the Kings Basin are farmland. Some houses, roads, and water supply infrastructure (wells, canals, etc.) are also located in the floodplains. Major flooding would not likely cause serious disruptions to essential emergency-response services.

**5.b - Does part of your region lie within the Sacramento-San Joaquin Drainage District?**

No.

**5.c - Does aging critical flood protection infrastructure exist in your region?**

Major flood control facilities include Pine Flat Dam and Kings River levees. In addition, Friant Dam on the San Joaquin River impacts flooding along the San Joaquin River, on the northern boundary of the Kings Basin. These facilities are all considered to be in good condition.

**5.d - Have flood control facilities (such as impoundment structures) been insufficient in the past?**

Major flood control facilities including dams and levees have been sufficient in past years. Levee breaks along the Kings River would likely not cause serious problems and in most cases would only flood farmland.

**5.e - Are wildfires a concern in parts of your region?**

Wildfires are not generally a concern in the Kings Basin, but they are a concern in the San Joaquin River and Kings River watersheds which are largely forested. Wildfires can result in severe short-term erosion and water quality degradation of surface waters.

## **6. Ecosystem and Habitat Vulnerability**

**6.a - Does your region include inland or coastal aquatic habitats vulnerable to erosion and sedimentation issues?**

No.

**6.b - Does your region include estuarine habitats which rely on seasonal freshwater flow patterns?**

No.

**6.c - Do climate-sensitive fauna or flora populations live in your region?**

A variety of flora and fauna live in the area and some are likely climate sensitive. Due to urban and agricultural development, some have limited ability to migrate as a means of adapting to climate change.

**6.d - Do endangered or threatened species exist in your region? Are changes in species distribution already being observed in parts of your region?**

Yes, several threatened and endangered species are found in the area. No noticeable changes in species distribution are known to have occurred since the region was developed.

**6.e - Does the region rely on aquatic or water-dependent habitats for recreation or other economic activities?**

Recreation is an important part of the local culture on the Kings River, San Joaquin River and in Pine Flat Reservoir. These recreational opportunities also provide a minor benefit to the local economy.

**6.f - Are there rivers in your region with quantified environmental flow requirements or known water quality/quantity stressors to aquatic life?**

The San Joaquin River and Kings River both have schedules for minimum environmental flows. These flows are the highest priority water uses, and are likely to be met, except possibly in an exceptionally dry year.

**6.g - Do estuaries, coastal dunes, wetlands, marshes, or exposed beaches exist in your region? If so, are coastal storms possible/frequent in your region?**

No.

**6.h - Does your region include one or more of the habitats described in the Endangered Species Coalition's Top 10 habitats vulnerable to climate change (<http://www.itsgettinghotoutthere.org/>)?**

The Kings Basin is not included in the list of top 10 habitats vulnerable to climate change. However, the Kings River watershed is located in the Sierra Nevada Mountains, which is on the list.

**6.i - Are there areas of fragmented estuarine, aquatic, or wetland wildlife habitat within your region? Are there movement corridors for species to naturally migrate? Are there infrastructure projects planned that might preclude species movement?**

Due to the large amount of urban and agricultural development, prime wildlife habitat is generally fragmented in the valley portion of the Kings Basin. However, wildlife could feasibly travel between prime habitat areas through agricultural land, or along the Kings River corridor and its tributaries. In the foothills, and forested areas east of the basin, large un-fragmented wilderness areas are found. A high-speed rail project is proposed that could further fragment habitats in the Kings Basin.

## **7. Hydropower**

**7.a - Is hydropower a source of electricity in your region?**

Yes. Hydropower is generated on the Kings River, San Joaquin River, and along the Friant-Kern Canal. The electricity is sold to the local power company and delivered to the electric grid, so it is not necessarily used directly in the Kings Basin, but is a valuable resource.

**7.b - Are energy needs in your region expected to increase in the future? If so, are there future plans for hydropower generation facilities or conditions for hydropower generation in your region?**

Energy demands are likely to increase in the region due to population growth, and to accommodate any climate change. No new major hydropower projects are planned for the area and are probably not likely to be pursued due to permitting difficulties. Some small hydropower projects are being considered along canals or at existing dams to utilize fish release flows. However, the energy generated from these projects would be small.

### Conclusions from Vulnerability Assessment

Based on the analysis above the following vulnerabilities were identified for the Kings Basin. These vulnerabilities are listed in their order of importance.

- 1. Backup Water Supplies.** The region has a reliable water supply, largely because groundwater is a dependable backup supply during droughts and the dry season. However, the groundwater level is declining and groundwater demands may increase if climate change reduces precipitation or causes earlier spring runoff that cannot be stored. If groundwater levels decline too much then the groundwater will become a less reliable supply, and groundwater quality may decline. This vulnerability can be measured with several parameters including

groundwater overdraft, groundwater level decline, groundwater remaining in storage, and changes in well yields.

2. **Inadequate Water Storage.** Storage facilities in the Kings Basin include Pine Flat reservoir, several smaller reservoirs in the upper Kings River watershed, and groundwater banks in the valley. These facilities have been successful in helping the region regulate seasonal and year-to-year flows; however, there is still demand for more storage. These facilities may be inadequate if warming reduces water storage in the form of snow. Obtaining permits to construct large dams is difficult, and, therefore, storage would have to be developed with numerous groundwater banks and off-channel reservoirs. This vulnerability can be measured by the volume of new storage developed in acre-feet.
3. **Climate Sensitive Crops.** Warmer temperatures could reduce losses for some crops from winter freezes, but other crops depend on some winter freezes to kill pests or ensure an effective dormancy. Higher temperatures could result in lower yields for these crops. No adaptation measures are available for this impact, other than changing crop types, which is expensive if permanent plantings are impacted. This vulnerability can be measured with the number of chilling hours below freezing, and impacts to crop productivity each year.
4. **Flooding.** Flooding is not currently a large problem, but increases in high flows could create future problems since it is unlikely that large flood control dams can be constructed. Therefore, proper floodplain zoning and limiting high-value development on floodplains is crucial to preventing future problems. This vulnerability can be measured by the number of essential structures constructed in the 200-year floodplain.

These vulnerabilities will be re-evaluated at least every five years to reflect changes in local cropping, water demands, water supplies, new facilities, and climate change projections.

### 17.5 Climate Change Models

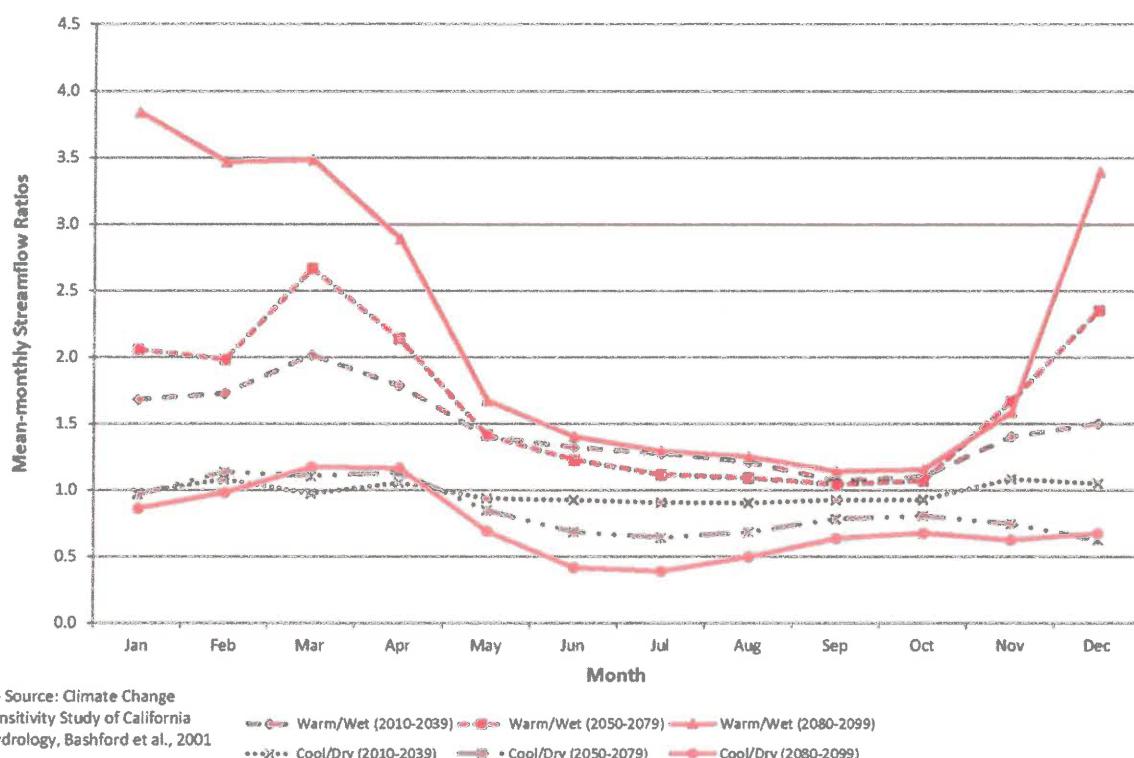
Climate change models are tools that can help identify a range of possible future climatic conditions. The Kings Basin Water Authority (Authority) did not perform model studies, primarily because several other organizations have modeled the local area. The results from each model differ, likely a result of different assumptions and differences in understanding the earth's processes and feedbacks. Taken as a group, however, climate models present a range of possible future conditions. Two models are described below followed by several general predictions for the State of California and Sierra Nevada mountain range.

#### Climate Change Sensitivity Study of California Hydrology

In 2001, the Lawrence Berkeley National Laboratory and National Oceanic and Atmospheric Administration published a report entitled '*Climate Change Sensitivity Study of California Hydrology*'. Six headwater basins in California were evaluated

including the Kings River Basin. Two climate change projections were used including a warm/wet scenario (HadCM2 run 1) and a cool/dry scenario (PCM run B06.06), based on projections provided by the Third Assessment Report of the Intergovernmental Panel on Climate Change. The 'cool/dry' scenario still includes increasing temperatures, but at a slower rate than the 'warm/wet' scenario. The conditions described by these global models were used to assess local conditions in specific areas of California.

The study provided estimated changes in temperature and precipitation for the two scenarios during different time periods. These impacts are ultimately reflected in changes to streamflows, which are illustrated in **Figure 17-2**. The streamflow ratios represent the ratio of projected streamflow to historical conditions (historical conditions have a ratio of 1.0).



**Figure 17-2: Estimated Impacts to Kings River Flows  
(Warm/Wet and Cool/Dry Climate Change Scenarios)**

**Figure 17-2** shows two vastly different scenarios, and illustrates both the uncertainty in climate change predictions and the importance of being prepared for a range of impacts.

The warm/wet scenario would provide additional water, which would be welcome in the water-short Kings Basin. However, some of this moisture would be lost to higher

evaporation and transpiration, and some would leave the basin as flood flows. This scenario could also present serious flooding problems throughout the Kings Basin, especially along the Kings River.

The cool/dry scenario would result in less overall moisture. Streamflows would be higher in the late winter and early spring due to earlier snowmelts. Late spring and summer flows would be lower, which could have serious water supply impacts.

The report also lists seven previous studies that suggested Sierra Nevada streams are likely to peak earlier in the season under global warming. In addition, a key finding was that basin elevation has the greatest influence on streamflow sensitivity to climate change. The Kings Basin watershed is at a high elevation compared to some of the other basins modeled, and was less sensitive to rising temperatures.

#### Future Climate Conditions in Fresno County and Surrounding Counties

In 2010, the National Center for Conservation Science and Policy (NCCSP), prepared a report entitled '*Future Climate Conditions in Fresno County and Surrounding Counties*'. The report predicted climate change impacts in Fresno, Madera, Kings and Tulare Counties. The entirety of the Kings Basin is included in the study area.

The report is based on climate change model outputs provided by the USDA Forest Service Pacific Northwest Research Station and mapped by the NCCSP. Three global climate models were selected that represent a range of projections for temperature and other climate variables. These three models are Hadley (HADCM from the UK), MIROC (from Japan), and CSIRO (from Australia). Model outputs were converted to local scales using data on historic precipitation and temperature patterns. NCCSP mapped climate variables for a historical period (1960-1990) and for two future periods (2035-2045 and 2075-2085). Results were divided into a lower region (<1,000 feet elevation) and an upper region (> 1,000 ft elevation). The predicted changes in precipitation and temperature are summarized in **Table 17-1** and **Table 17-2**. The report did not provide predicted changes in streamflow.

**Table 17-1: Projected Changes in Precipitation**

Time Period	Average Precipitation (% change from historic)			
	Lower Region		Upper Region	
Historic	9.4 in	-	29.9 in.	-
2035-2045	6.9 – 10.6 in.	-27% to +13%	21.7 – 33.6 in.	-28% to 12%
2075-2085	6.8 – 8.8 in.	-28% to -7%	20.5 – 28.2 in.	-32% to -6%

Note: USDA Forest Service Model

Projections for future precipitation varied among the three models, but all three agreed on drier conditions, on average, by late century, especially in the spring.

**Table 17-2: Projected Increased in Temperature (F°)**

Time Period	Upper Region	Lower Region
Historic	46.4	62.3
2035-2045	+2.5 – 4.8	+2.3 – 4.3
2075-2085	+5.2 – 8.9	+4.7 – 8.2

Note: USDA Forest Service Model

#### General Predictions for California and the Sierra Nevada Mountain Range

Several publications provide general statements on predicted climate change in California and the Sierra Nevada range. These general statements are not specific to the Kings Basin and are generally considered less reliable than local modeling results. However, they are useful for discussion and comparison purposes, and are listed in **Table 17-3**

**Table 17-3: General Climate Change Predictions**

Source	Prediction
Climate Change Adaptation Strategies for California's Water (DWR, 2008)	Water managers should use a drought component that assumes, until more accurate information is available, a 20 percent increase in the frequency and duration of future dry conditions.
	DWR projects that Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050.
Sierra Climate Change Toolkit, 2 <sup>nd</sup> Edition (Sierra Nevada Alliance, 2007)	In most cases, total annual streamflow into major Sierra Nevada reservoirs is projected to drop about 10 to 20 percent before mid-century and 25 to 30 percent before the end of the century.
The Ahwannee Principles for Climate Change (Local Government Commission, 2009)	The State's largest reservoir (snowpack) is predicted to lessen by one third over the next 50 years and to half its historic size by the end of the century.

#### **17.6 Adaptation Measures**

Climate change adaptation is a response that seeks to reduce the severity of climate change impacts to human and natural systems. The adaptation measures identified below do not address a specific quantified impact, but rather focus on a range of

potential impacts. Since climate change predictions will never be perfect, flexibility and diversity in adaptation measures is fundamental. The adaptation measures will also help the region to improve resiliency, which is defined as the ability to return to original conditions after a disturbance or impact.

The DWR defines ‘no-regret’ strategies as actions that provide measurable benefits today while also reducing vulnerability to climate change (DWR, 2011). In other words, they are strategies that provide benefits with or without climate change. For instance, constructing a water bank would provide needed water supply benefits in the present, but could mitigate climate change impacts through floodwater capture, increasing water storage, and enhancing wetland habitat. The Water Education Foundation (2010) believes that planning for climatic uncertainty will also benefit planning for regulatory, environmental, economic, and social uncertainty.

The IRWMP Update Workgroup concluded that no-regret strategies should comprise the majority of adaptation measures. Consequently, the threat of climate change further justifies the need for many water management strategies already being used in the region. Furthermore, climate change adaptation is not in conflict with current Goals and Objectives of the region.

Most of the resource management strategies described in Section 6 would assist with climate change adaptation. However, the following strategies were deemed the most practical and effective for climate change adaptation in the Kings Basin:

- Improve urban and agricultural water efficiency
- Increase use of recycled water (where energy efficient)
- Revise land use planning policies to encourage conservation (e.g. low impact development or water efficiency standards)
- Develop groundwater recharge and banking projects
- Develop water storage projects inside and outside of the Kings Basin
- Increase ability to capture floodwater both for flood control and water supply
- Restore mountain meadows, wetlands, and riparian areas to regulate flows resulting in more summer runoff
- Change crop types to accommodate climate change

The overall theme with these strategies is to expand the extreme conditions (drought and floods) that the region can accommodate. Eliminating or reducing groundwater overdraft is considered the primary strategy for addressing water supply impacts from climate change.

### 17.7 Climate Change Monitoring

Climate change monitoring includes two components: 1) monitoring hydrologic and meteorologic parameters for climate change; and 2) monitoring climate change literature, legislation and modeling results.

The Kings Basin already includes a robust network for monitoring the hydrology, meteorology, water demands, water use, crop yields and wildlife. No immediate improvements are needed to monitor for climate change. The monitoring programs are periodically evaluated and upgraded, and the need for improvements to evaluate climate change will also be periodically evaluated.

Water projects were designed and are operated on the assumption that future hydrology will mimic past hydrology. Climate change will likely change future hydrology. However, the specific changes to the hydrology are uncertain, and some scientists are still undecided on whether the region will have a wetter or drier climate. Consequently, future projects will continue to be designed based on past hydrology until more definitive predictions are available. However, the potential change in hydrology is the driving force behind adaptation measures which will be pursued by the Authority.

The science of climate change, and the tools to mitigate and adapt to climate change, are still evolving. As a result, every five years as part of the California Water Plan Update process, DWR will provide revised estimates of changes to sea levels, droughts, and flooding that can be expected over the following 25 years. The Authority will also stay apprised of new studies, reports, literature, legislation, and climate change model runs that are pertinent to the area. When needed this literature will be shared with the Authority members and interested parties, and incorporated into the IRWMP updates.

### **17.8 Mitigation of Greenhouse Gas Emissions**

Mitigation of climate change can be achieved by selecting and promoting projects that help to reduce greenhouse gas emissions (GHG) emissions. While the Authority is not responsible for air quality management, and they can only have a small impact on global emissions, it is sensible to consider emissions in project selection in view of the negative impacts climate change may have on water resources. The Authority is also dedicated to helping the State meet GHG emission reduction goals. These goals, prescribed in the California Global Warming Solutions Act of 2006 (AB 32), include reaching 2000 emission levels by 2010, 1990 levels by 2020, and 80% below 1990 levels by 2050.

All of the resource management strategies described in Chapter 6 can assist with climate change mitigation through reduction in energy demand, ecosystem enhancement, or carbon sequestration. For instance, water conservation can reduce energy demands to pump, convey, and treat water supplies. Another example is riparian area restoration, which can sequester carbon and create habitat for species impacted by climate change.

Projects are primarily ranked based on their water supply benefits, but GHG emissions and climate change adaptation were added as secondary considerations. Specifically, the following questions were added to the Project Review Process form:

1. Will this project result in reduced greenhouse gas emissions? If yes, explain how and quantify.
2. Will this project increase greenhouse gas emissions? If yes, explain how and quantify.
3. Will this project contribute to adaptation strategies to respond to climate change impacts?

Beginning July 1, 2012, GHG emissions for California Environmental Quality Act (CEQA) studies are required to be calculated using the California Emissions Estimator Model (CalEEMod). CalEEMod quantifies potential criteria pollutant and GHG emissions from construction and operations for a variety projects. The Authority will also require that this model be used on projects considered for funding.

### 17.9 Climate Change in other IRWMP Sections

Climate change is discussed in several other IRWMP sections including:

- **Chapter 5 – Goals and Objectives.** This chapter includes general goals related to climate change adaptation and mitigation.
- **Chapter 6 - Resource Management Strategies** – This chapter discusses the impacts of climate change on the efficacy of different strategies, and the ability of strategies to help adapt to climate change.
- **Chapter 7 - Project Review Process** – The project review process includes new questions related to GHG emissions (Section 17.8)
- **Chapter 12 - Relation to Local Water Planning** – This chapter summarizes the climate change adaptation and mitigation strategies from local water plans, and evaluates their consistency with the goals of this IRWMP.

**Appendix F**  
**SB X7-7 VERIFICATION FORM**

## SB X7-7 Verification Form Version FINAL.1

Table 4-C.4 has been modified from the FINAL version.

### WUEdata Entry Exceptions

The data from the tables below will not be entered into WUEdata tables (the tabs for these tables' worksheets are colored **purple**). These tables will be submitted as separate uploads, in Excel, to WUEdata.

#### Process Water Deduction

SB X7-7 tables 4-C, 4-C.1, 4-C.2, 4-C.3, 4-C.4 and 4-D

A

supplier that will use the process water deduction will complete the appropriate tables in Excel, submit them as a separate upload to the WUE data tool, and include them in its UWMP.

#### Target Method 2

SB X7-7 tables 7-B, 7-C, and 7-D

A supplier that selects Target Method 2 will contact DWR (gwen.huff@water.ca.gov) for SB X7-7 tables 7-B, 7-C, and 7-D.

#### Target Method 4

These tables are only available online at

<http://www.dwr.water.ca.gov/wateruseefficiency/sb7/committees/urban/u4/ptm4.cfm>

A supplier

that selects Target Method 4 will save the tables from the website listed above, complete the tables, submit as a separate upload to WUE data, and include them with its UWMP.

**SB X7-7 Table 0: Units of Measure Used in UWMP\***

*(select one from the drop down list)*

Million Gallons

*\*The unit of measure must be consistent with Table 2-3*

NOTES:

SB X7-7 Table-1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	1,273	Million Gallons
	2008 total volume of delivered recycled water	-	Million Gallons
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period <sup>1, 2</sup>	10	Years
	Year beginning baseline period range	2001	
	Year ending baseline period range <sup>3</sup>	2010	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2006	
	Year ending baseline period range <sup>4</sup>	2010	
<sup>1</sup> If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.			
<sup>2</sup> The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.			
<sup>3</sup> The ending year must be between December 31, 2004 and December 31, 2010.			
<sup>4</sup> The ending year must be between December 31, 2007 and December 31, 2010.			
NOTES:			

**SB X7-7 Table 2: Method for Population Estimates**

<b>Method Used to Determine Population</b> (may check more than one)	
<input checked="" type="checkbox"/>	<b>1. Department of Finance (DOF)</b> DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
<input type="checkbox"/>	<b>2. Persons-per-Connection Method</b>
<input type="checkbox"/>	<b>3. DWR Population Tool</b>
<input type="checkbox"/>	<b>4. Other</b> DWR recommends pre-review
NOTES:	

**SB X7-7 Table 3: Service Area Population**

Year	Population	
<b>10 to 15 Year Baseline Population</b>		
Year 1	2001	8,717
Year 2	2002	9,416
Year 3	2003	9,792
Year 4	2004	10,350
Year 5	2005	10,985
Year 6	2006	12,062
Year 7	2007	12,571
Year 8	2008	12,841
Year 9	2009	13,286
Year 10	2010	13,554
<i>Year 11</i>		
<i>Year 12</i>		
<i>Year 13</i>		
<i>Year 14</i>		
<i>Year 15</i>		
<b>5 Year Baseline Population</b>		
Year 1	2006	12,062
Year 2	2007	12,571
Year 3	2008	12,841
Year 4	2009	13,286
Year 5	2010	13,554
<b>2015 Compliance Year Population</b>		
<b>2015</b>		14,284
NOTES:		

**SB X7-7 Table 4: Annual Gross Water Use \***

**SB X-7 Table 4-B: Indirect Recycled Water Use Deduction** (For use only by agencies that are deducting indirect recycled water)

**SB X7-7 Table 4-C: Process Water Deduction Eligibility***(For use only by agencies that are deducting process water) Choose Only One*

<input type="checkbox"/>	<b>Criteria 1-</b> Industrial water use is equal to or greater than 12% of gross water use. Complete SB X7-7 Table 4-C.1
<input type="checkbox"/>	<b>Criteria 2 -</b> Industrial water use is equal to or greater than 15 GPCD. Complete SB X7-7 Table 4-C.2
<input type="checkbox"/>	<b>Criteria 3 -</b> Non-industrial use is equal to or less than 120 GPCD. Complete SB X7-7 Table 4-C.3
<input checked="" type="checkbox"/>	<b>Criteria 4 -</b> Disadvantaged Community. Complete SB x7-7 Table 4-C.4
NOTES:	

### SB X7-7 Table 4-C.1: Process Water Deduction Eligibility

#### Criteria 1

Industrial water use is equal to or greater than 12% of gross water use

Baseline Year <i>Fm SB X7-7 Table 3</i>	Gross Water Use Without Process Water	Industrial Water Use	Percent Industrial Water	Eligible for Exclusion Y/N
10 to 15 Year Baseline - Process Water Deduction Eligibility				
Year 1	2001	787		0% NO
Year 2	2002	917		0% NO
Year 3	2003	942		0% NO
Year 4	2004	987		0% NO
Year 5	2005	991		0% NO
Year 6	2006	1,019		0% NO
Year 7	2007	1,265		0% NO
Year 8	2008	1,273		0% NO
Year 9	2009	1,200		0% NO
Year 10	2010	1,079		0% NO
Year 11	0	-		NO
Year 12	0	-		NO
Year 13	0	-		NO
Year 14	0	-		NO
Year 15	0	-		NO
5 Year Baseline - Process Water Deduction Eligibility				
Year 1	2006	1,019		0% NO
Year 2	2007	1,265		0% NO
Year 3	2008	1,273		0% NO
Year 4	2009	1,200		0% NO
Year 5	2010	1,079		0% NO
2015 Compliance Year - Process Water Deduction Eligibility				
2015	898		0%	NO
NOTES:				

## SB X7-7 Table 4-C.2: Process Water Deduction Eligibility

### Criteria 2

Industrial water use is equal to or greater than 15 GPCD

Baseline Year <i>Fm SB X7-7 Table 3</i>	Industrial Water Use	Population	Industrial GPCD	Eligible for Exclusion Y/N
10 to 15 Year Baseline - Process Water Deduction Eligibility				
Year 1	2001	8,717	-	NO
Year 2	2002	9,416	-	NO
Year 3	2003	9,792	-	NO
Year 4	2004	10,350	-	NO
Year 5	2005	10,985	-	NO
Year 6	2006	12,062	-	NO
Year 7	2007	12,571	-	NO
Year 8	2008	12,841	-	NO
Year 9	2009	13,286	-	NO
Year 10	2010	13,554	-	NO
Year 11	0	-	-	NO
Year 12	0	-	-	NO
Year 13	0	-	-	NO
Year 14	0	-	-	NO
Year 15	0	-	-	NO
5 Year Baseline - Process Water Deduction Eligibility				
Year 1	2006	12,062	-	NO
Year 2	2007	12,571	-	NO
Year 3	2008	12,841	-	NO
Year 4	2009	13,286	-	NO
Year 5	2010	13,554	-	NO
2015 Compliance Year - Process Water Deduction Eligibility				
2015		14,284	-	NO
NOTES:				

### SB X7-7 Table 4-C.3: Process Water Deduction Eligibility

### Criteria 3

Non-industrial use is equal to or less than 120 GPCD

**SB X7-7 Table 4-C.4: Process Water Deduction Eligibility****Criteria 4**

Disadvantaged Community. A "Disadvantaged Community" (DAC) is a community with a median household income less than 80 percent of the statewide average.

**SELECT ONE**

"Disadvantaged Community" status was determined using one of the methods listed below:

1. IRWM DAC Mapping tool  
[http://www.water.ca.gov/irwm/grants/resources\\_dac.cfm](http://www.water.ca.gov/irwm/grants/resources_dac.cfm)

If using the IRWM DAC Mapping Tool, include a screen shot from the tool showing that the service area is considered a DAC.

2. 2010 Median Income

	California Median Household Income	Service Area Median Household Income	Percentage of Statewide Average	Eligible for Exclusion? Y/N
2015 Compliance Year - Process Water Deduction Eligibility				
2010	\$60,883	\$45,539	75%	YES
NOTES:				

**SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)**

<b>Baseline Year</b> <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Annual Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use (GPCD)
<b>10 to 15 Year Baseline GPCD</b>				
Year 1	2001	8,717	787	247
Year 2	2002	9,416	917	267
Year 3	2003	9,792	942	264
Year 4	2004	10,350	987	261
Year 5	2005	10,985	991	247
Year 6	2006	12,062	1,019	231
Year 7	2007	12,571	1,265	276
Year 8	2008	12,841	1,273	272
Year 9	2009	13,286	1,200	247
Year 10	2010	13,554	1,079	218
Year 11	0	-	-	-
Year 12	0	-	-	
Year 13	0	-	-	
Year 14	0	-	-	
Year 15	0	-	-	
<b>10-15 Year Average Baseline GPCD</b>				<b>253</b>
<b>5 Year Baseline GPCD</b>				
<b>Baseline Year</b> <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use
Year 1	2006	12,062	1,019	231
Year 2	2007	12,571	1,265	276
Year 3	2008	12,841	1,273	272
Year 4	2009	13,286	1,200	247
Year 5	2010	13,554	1,079	218
<b>5 Year Average Baseline GPCD</b>				<b>249</b>
<b>2015 Compliance Year GPCD</b>				
<b>2015</b>		14,284	898	<b>172</b>
NOTES:				

**SB X7-7 Table 6: Gallons per Capita per Day***Summary From Table SB X7-7 Table 5*

10-15 Year Baseline GPCD	253
5 Year Baseline GPCD	249
2015 Compliance Year GPCD	172
NOTES:	

**SB X7-7 Table 7: 2020 Target Method***Select Only One*

Target Method		Supporting Documentation
<input checked="" type="checkbox"/>	Method 1	SB X7-7 Table 7A
<input type="checkbox"/>	Method 2	SB X7-7 Tables 7B, 7C, and 7D <i>Contact DWR for these tables</i>
<input type="checkbox"/>	Method 3	SB X7-7 Table 7-E
<input type="checkbox"/>	Method 4	Method 4 Calculator

NOTES:

**SB X7-7 Table 7-A: Target Method 1**

20% Reduction

10-15 Year Baseline GPCD	2020 Target GPCD
253	202

NOTES:

**SB X7-7 Table 7-B: Target Method 2****Water Use****Target Landscape**

Tables for Target Method 2 (SB X7-7 Tables 7-B, 7-C, and 7-D) are not included in the SB X7-7 Verification Form, but are still required for water suppliers using Target Method 2. These water suppliers should contact Gwen Huff at (916) 651-9672 or [gwen.huff@water.ca.gov](mailto:gwen.huff@water.ca.gov)

**SB X7-7 Table 7-C: Target Method 2****Target CII Water Use**

Tables for Target Method 2 (SB X7-7 Tables 7-B, 7-C, and 7-D) are not included in the SB X7-7 Verification Form, but are still required for water suppliers using Target Method 2. These water suppliers should contact Gwen Huff at (916) 651-9672 or [gwen.huff@water.ca.gov](mailto:gwen.huff@water.ca.gov)

**SB X7-7 Table 7-D: Target Method 2 Summary**

Tables for Target Method 2 (SB X7-7 Tables 7-B, 7-C, and 7-D) are not included in the SB X7-7 Verification Form, but are still required for water suppliers using Target Method 2. These water suppliers should contact Gwen Huff at (916) 651-9672 or [gwen.huff@water.ca.gov](mailto:gwen.huff@water.ca.gov)

**SB X7-7 Table 7-E: Target Method 3**

Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
<input type="checkbox"/>		North Coast	137	130
<input type="checkbox"/>		North Lahontan	173	164
<input type="checkbox"/>		Sacramento River	176	167
<input type="checkbox"/>		San Francisco Bay	131	124
<input type="checkbox"/>		San Joaquin River	174	165
<input type="checkbox"/>		Central Coast	123	117
<input checked="" type="checkbox"/>	100%	Tulare Lake	188	179
<input type="checkbox"/>		South Lahontan	170	162
<input type="checkbox"/>		South Coast	149	142
<input type="checkbox"/>		Colorado River	211	200
<b>Target</b> <i>(If more than one region is selected, this value is calculated.)</i>				<b>179</b>
NOTES:				

<b>SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target</b>			
5 Year Baseline GPCD <i>From SB X7-7 Table 5</i>	Maximum 2020 Target <sup>1</sup>	Calculated 2020 Target <sup>2</sup>	<b>Confirmed 2020 Target</b>
249	236	203	<b>203</b>
<sup>1</sup> Maximum 2020 Target is 95% of the 5 Year Baseline GPCD except for suppliers at or below 100 GPCD.			
<sup>2</sup> 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.			
NOTES:			

<b>SB X7-7 Table 8: 2015 Interim Target GPCD</b>		
Confirmed 2020 Target <i>Fm SB X7-7 Table 7-F</i>	10-15 year Baseline GPCD <i>Fm SB X7-7 Table 5</i>	<b>2015 Interim Target GPCD</b>
203	253	<b>228</b>
NOTES:		

**SB X7-7 Table 9: 2015 Compliance**

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments (in GPCD)					2015 GPCD (Adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015?		
		Enter "0" if Adjustment Not Used			TOTAL Adjustments	Adjusted 2015 GPCD				
		Extraordinary Events	Weather Normalization	Economic Adjustment						
172	228	-	-	-	-	172	172	YES		

NOTES:

**Appendix G**  
**GROUNDWATER BULLETIN 118**

## **San Joaquin Valley Groundwater Basin**

### **Kings Subbasin**

- Groundwater Subbasin Number: 5-22.08
- County: Fresno, Kings, and Tulare
- Surface Area: 976,000 acres (1,530 square miles)

#### **Subbasin Boundaries and Hydrology**

The San Joaquin Valley is surrounded on the west by the Coast Ranges, on the south by the San Emigdio and Tehachapi Mountains, on the east by the Sierra Nevada and on the north by the Sacramento-San Joaquin Delta and Sacramento Valley. The northern portion of the San Joaquin Valley drains toward the Delta by the San Joaquin River and its tributaries, the Fresno, Merced, Tuolumne, and Stanislaus Rivers. The southern portion of the valley is internally drained by the Kings, Kaweah, Tule, and Kern Rivers that flow into the Tulare drainage basin including the beds of the former Tulare, Buena Vista, and Kern Lakes.

The Kings Subbasin is bounded on the north by the San Joaquin River. The northwest corner of the subbasin is formed by the intersection of the east line of the Farmers Water District with the San Joaquin River. The west boundary of the Kings Subbasin is the eastern boundaries of the Delta-Mendota and Westside Subbasins. The southern boundary runs easterly along the northern boundary of the Empire West Side Irrigation District, the southern fork of the Kings River, the southern boundary of Laguna Irrigation District, the northern boundary of the Kings County Water District, the southern boundaries of Consolidated and Alta Irrigation Districts, and the western boundary of Stone Corral Irrigation District. The eastern boundary of the subbasin is the alluvium-granitic rock interface of the Sierra Nevada foothills.

The San Joaquin and Kings Rivers are the two principal rivers within or bordering the subbasin. The Fresno Slough and James Bypass are along the western edge of the subbasin and connect the Kings River with the San Joaquin River. Average annual precipitation values range from seven to 10 inches, increasing eastward.

#### **Hydrogeologic Information**

The San Joaquin Valley represents the southern portion of the Great Central Valley of California. The San Joaquin Valley is a structural trough up to 200 miles long and 70 miles wide. It is filled with up to 32,000 feet of marine and continental sediments deposited during periodic inundation by the Pacific Ocean and by erosion of the surrounding mountains, respectively. Continental deposits shed from the surrounding mountains form an alluvial wedge that thickens from the valley margins toward the axis of the structural trough. This depositional axis is below to slightly west of the series of rivers, lakes, sloughs, and marshes, which mark the current and historic axis of surface drainage in the San Joaquin Valley.

### ***Water Bearing Formations***

The Kings Subbasin groundwater aquifer system consists of unconsolidated continental deposits. These deposits are an older series of Tertiary and Quaternary age overlain by a younger series of deposits of Quaternary age. The Quaternary age deposits are divided into older alluvium, lacustrine and marsh deposits, younger alluvium, and flood-basin deposits.

The older alluvium is an important aquifer in the subbasin. It consists of intercalated lenses of clay, silt, silty and sandy clay, clayey and silty sand, sand, gravel, cobbles, and boulders. It is, generally, fine grained near the trough of the valley. Lacustrine and marsh deposits are interbedded with the older alluvium in the western portion of the subbasin.

The younger alluvium is a sedimentary deposit of fluvial arkosic beds that overlies the older alluvium and is interbedded with the flood-basin deposits. Its lithology is similar to the underlying older alluvium. Beneath river channels, the younger alluvium is highly permeable. Beneath flood plains, it may be of poor permeability. The flood-basin deposits occur along the Fresno Slough and James Bypass. They consist of sand, silt, and clay.

The continental deposits of Tertiary and Quaternary age crop out beneath the extreme southeastern part of the subbasin and yield small amounts of water to wells. The deposits of Quaternary age are exposed over most of the area and yield more than 90 percent of the water pumped from wells (Page and LeBlanc 1969).

Page and LeBlanc (1969) indicate that the specific yields in the subbasin range from a low of 0.2 percent to 36 percent. To calculate storage capacity in the 10 to 200 foot depth range, Davis and others (1959) used a range of specific yields from approximately six percent to 18 percent. Williamson and others (1989) used an average specific yield of 11.3 percent in the area of the subbasin for computer modeling purposes.

### ***Restrictive Structures***

The lacustrine and marsh deposits contain silts and clays and restrict the vertical movement of water. The Corcoran Clay (E-clay) member of the Tulare formation is the most extensive of these deposits and occupies the western one-quarter to one-third of the subbasin. Its depth ranges from about 250-550 feet (DWR 1981) although much of the information shown on the map is indicated as inferred. The A-clay and C-clay are less extensive and lie above the Corcoran Clay. These clay layers cause confined groundwater conditions beneath them.

### ***Recharge Areas***

Groundwater recharge occurs from river and stream seepage, deep percolation of irrigation water, canal seepage, and intentional recharge. The Cities of Fresno and Clovis, Fresno Irrigation District, and Fresno Metropolitan Flood Control District have a cooperative effort to utilize individually owned facilities to recharge water in the greater urban area. Fresno Irrigation District, Consolidated Irrigation District, and others have

recharge efforts in the subbasin. The Fresno-Clovis metropolitan area uses a regional sewage treatment facility that disposes of water in percolation ponds southwest of Fresno.

### ***Groundwater Level Trends***

Groundwater flow is generally to the southwest. Two notable groundwater depressions exist. One is centered in Fresno-Clovis urban area. The other is centered approximately 20 miles southwest of Fresno (DWR 2000) in the Raisin City Water District.

Most well water levels indicated a response to the 1976-77 drought. After the 1987-92 drought, wells in the northeast showed water levels from 10 to 40 feet below pre-1976-77 drought water levels. Water levels in the western subbasin experienced declines of 10 to 50 feet during the 1987-92 drought and are in various stages of recovery to mid-1980s levels. Water levels in the southeast have, generally, recovered to mid-1980s levels.

### ***Groundwater Storage***

Groundwater in Storage.

Williamson (1989) indicates that the groundwater in storage was 93,000,000 af in 1961. This estimate was to a depth of 1,000 feet or less.

### ***Groundwater Budget (Type C)***

The potential for subsurface flows south and westward exists. Depending upon groundwater conditions in the Westside Subbasin, subsurface flows may occur in that direction. The potential for groundwater flow in either direction along the southern boundary exists. Groundwater depressions on either side of the boundary and groundwater mounding from recharge along the Kings River complicate flow patterns in the area.

### ***Groundwater Quality***

**Characterization.** The groundwater is predominantly of bicarbonate type. The major cations are calcium, magnesium, and sodium. Sodium appears higher in the western portion of the subbasin where some chloride waters are also found (Page and LeBlanc 1969).

Page and LeBlanc (1969) noted that the TDS of groundwater in the Fresno area seldom exceeds 600 mg/L although at greater depths, 2,000 mg/L groundwater has been encountered. A typical range of groundwater quality in the basin is 200 to 700 mg/L.

DHS data indicates an average TDS of 240 mg/L from 414 samples from Title 22 water supply wells. These samples ranged from 40 to 570 mg/L.

**Impairments.** Dibromochloropropane (DBCP), a soil fumigant nematicide, and nitrates can be found in groundwater along the eastern side of the subbasin. Shallow brackish groundwater can be found along the western portion of the subbasin. Elevated concentrations of fluoride, boron, and sodium can be found in localized areas of the subbasin.

## Water Quality in Public Supply Wells

Constituent Group <sup>1</sup>	Number of wells sampled <sup>2</sup>	Number of wells with a concentration above an MCL <sup>3</sup>
Inorganics – Primary	457	8
Radiological	443	24
Nitrates	463	23
Pesticides	495	105
VOCs and SVOCs	468	17
Inorganics – Secondary	457	41

<sup>1</sup> A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).

<sup>2</sup> Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

<sup>3</sup> Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

## Well Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range: – 20-3,000 (Page And LeBlanc 1969)	Average: 500-1,500
Total depths (ft)		
Domestic	Range: - Not determined	Average: Not determined
Municipal/Irrigation	Range: - 100-500 (Page and LeBlanc 1969 Table 14)	Average: 210

## Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR and Cooperating Agencies	Groundwater levels	909 Semi-annually
Local Agencies	Miscellaneous water quality	Varies
Department of Health Services and Cooperators	Title 22 Water quality	722 Varies

## Basin Management

Groundwater management:	The County of Fresno has an adopted groundwater management ordinance. The following entities have adopted AB3030 management plans: Alta Irrigation District, Consolidated Irrigation District, <a href="#">County of Fresno</a> , <a href="#">Fresno Irrigation District</a> , James Irrigation District, <a href="#">Kings River Conservation District</a> , Kings River Water District, Liberty Canal Company, Liberty Water District, Liberty Mill Race Company, Mid Valley Water District, Orange Cove Irrigation District, Raisin City Water District, and Riverdale Irrigation District.
Water agencies	
Public	City of Fresno, <a href="#">City of Clovis</a> , Alta I.D., Consolidated I.D., Fresno I.D., Hills Valley I.D., James I.D., Kings River Conservation District, Kings River Water District, Laguna I.D., Liberty Water District, Mid-Valley W.D., Orange Cove I.D., Raisin City W.D., Riverdale I.D., and Tri-Valley I.D.
Private	California Water Service Co., Bakman Water Company

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## Errata

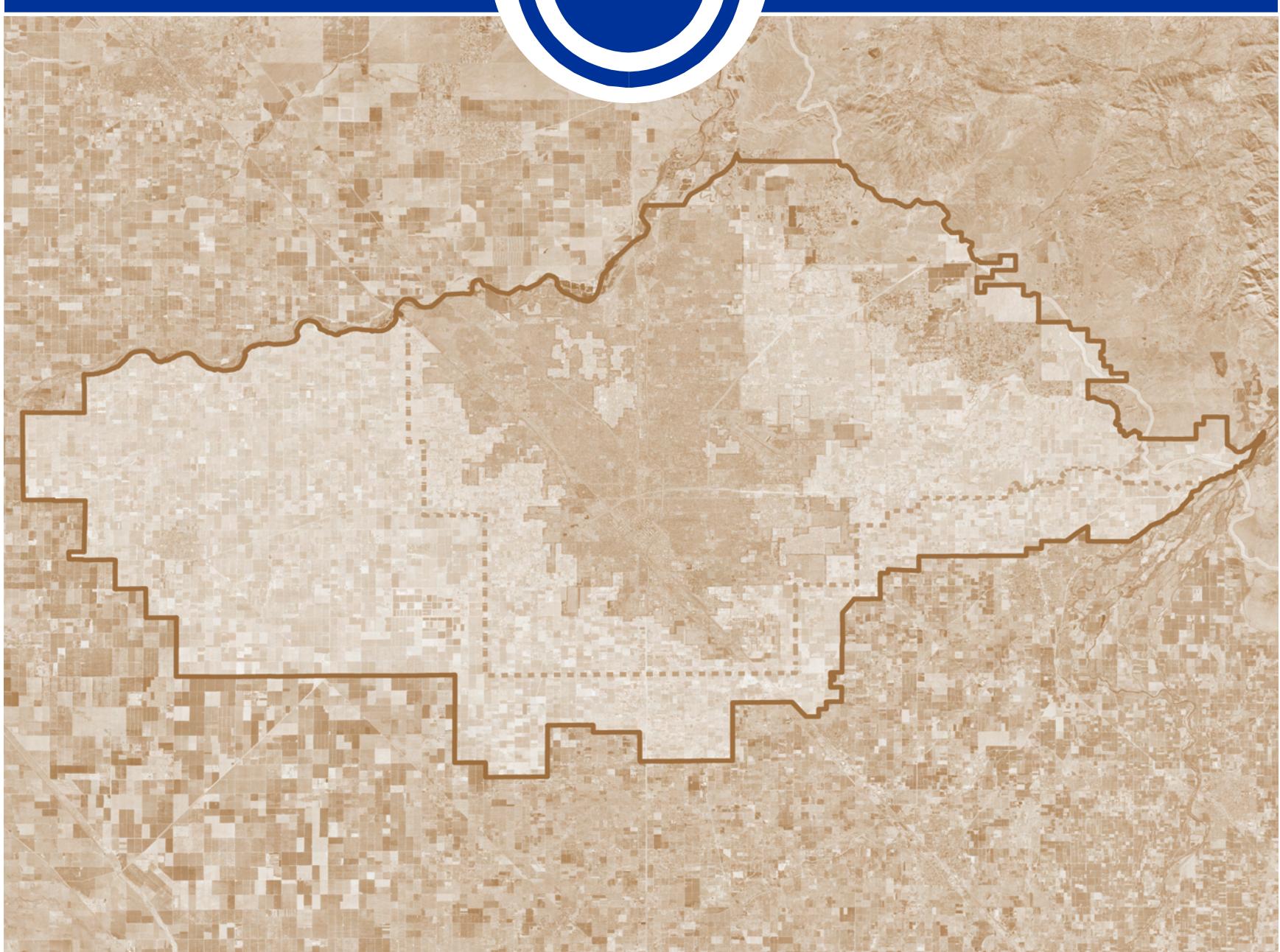
Updated groundwater management information and added hotlinks to applicable websites.  
(1/20/06)

**Appendix H**  
**FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

**WORKING  
DRAFT**  
*December 2005*



## *Fresno Area Regional* **Groundwater Management Plan**



- Fresno Irrigation District ● City of Clovis ● Fresno Metropolitan Flood Control District ●
- County of Fresno ● City of Fresno ● City of Kerman ● Bakman Water Company ●
- Garfield Water District ● Malaga County Water District ● Pinedale County Water District ●

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## The Fresno Area Regional Groundwater Management Plan

Adopted by:

Fresno Irrigation District  
City of Clovis  
Bakman Water Company  
County of Fresno  
City of Fresno  
Pinedale County Water District  
Fresno Metropolitan Flood Control District  
City of Kerman  
Malaga County Water District  
Garfield Water District

On:

01/25/2006  
02/13/2006  
03/13/2006  
07/18/2006  
04/18/2006  
09/20/2006  
02/08/2006  
03/01/2006  
02/14/2006  
11/01/2006

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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<b>1 - INTRODUCTION</b>	<b>1-1</b>
1.1 - Background Information on Regional Group	1-1
1.2 - Plan Area	1-2
1.3 - Purpose for this Groundwater Management Plan	1-5
1.4 - Previous Plans	1-5
1.5 - Statutory Authority for Groundwater Management	1-6
1.6 - Groundwater Management Plan Components	1-6
1.7 - Adoption of Plan	1-8
<b>2 - PARTICIPANT INFORMATION</b>	<b>2-1</b>
2.1 - Fresno Irrigation District	2-1
2.2 - Fresno County	2-2
2.3 - City of Fresno	2-4
2.4 - City of Clovis	2-5
2.5 - City of Kerman	2-6
2.6 - Madera County Water District	2-6
2.7 - Pinedale County Water District	2-7
2.8 - Fresno Metropolitan Flood Control District	2-7
2.9 - Bakman Water Company	2-8
2.10 - Garfield Water District	2-9
2.11 - Surrounding Area	2-9
<b>3 - GEOLOGY AND HYDROGEOLOGY OF THE FRESNO AREA</b>	<b>3-1</b>
3.1 - Geology	3-1
3.2 - Hydrogeologic Characteristics	3-1
3.3 - Groundwater Conditions within the Plan Area	3-6
3.4 - Historic Groundwater Monitoring Programs	3-6
<b>4 - REGIONAL GROUNDWATER MANAGEMENT OBJECTIVES</b>	<b>4-1</b>
<b>5 - STAKEHOLDER INVOLVEMENT</b>	<b>5-1</b>
5.1 - Advisory Committee of Stakeholders	5-1
5.2 - Relationships with Other Agencies	5-2
5.3 - Plan to Involve the Public and Non-Participating Agencies	5-3
<b>6 - MONITORING PROGRAM</b>	<b>6-1</b>
6.1 - Groundwater Level Monitoring	6-1
6.2 - Groundwater Quality Monitoring	6-4
6.3 - Monitoring Protocols	6-5
6.4 - Land Surface Subsidence Monitoring	6-7
6.5 - Surface Water Monitoring	6-7
<b>7 - GROUNDWATER RESOURCES PROTECTION</b>	<b>7-1</b>
7.1 - Well Destruction	7-1
7.2 - Well Construction Policies	7-1
7.3 - Wellhead Protection	7-2
7.4 - Saline Water Intrusion	7-3
7.5 - Migration of Contaminated Groundwater	7-4
7.6 - Groundwater Quality Protection	7-4
<b>8 - GROUNDWATER SUSTAINABILITY</b>	<b>8-1</b>
8.1 - Groundwater Recharge	8-1
8.2 - Water Conservation and Education	8-3

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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8.3 -	Groundwater Use Limitations	8-4
8.4 -	Conjunctive Use of Water Resources	8-6
8.5 -	Wastewater Reclamation and Recycling	8-7
8.6 -	Operation of Facilities	8-8
<b>9 -</b>	<b>GROUNDWATER PLANNING AND MANAGEMENT</b>	<b>9-1</b>
9.1 -	Plan Implementation	9-1
9.2 -	Groundwater Reports	9-1
9.3 -	Plan Re-evaluation	9-2
9.4 -	Land Use Planning	9-3
9.5 -	Dispute Resolution	9-3
9.6 -	Program Funding and Fees	9-4
<b>10 -</b>	<b>REFERENCES</b>	<b>10-1</b>

<b>List of Abbreviations.....</b>	<b>iii</b>
-----------------------------------	------------

## Figures

1-1	Groundwater Basin Map .....	1-3
1-2	Map of Participating Agencies .....	1-4
2-1	Map of Surface Water Facilities .....	2-3
2-2	Neighboring Agency Map .....	2-10
3-1	Historical Decline in Groundwater Level .....	3-3
3-2	Well Hydrographs .....	3-4
3-3	Groundwater Contours (January 2005) .....	3-5
6-1	Map of Domestic Production and Monitor Wells .....	6-3
9-1	Landuse Map .....	9-6

## Tables

1-1	Location of Groundwater Management Plan Components .....	1-7
2-1	Summary of Participants.....	2-11
5-1	Memberships in Water Related Organizations .....	5-5

## Appendices

A -	Public Participation in Plan Adoption
B-	Resolutions to Adopt Plan
C -	Memorandum of Understanding
D -	Glossary

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## LIST OF ABBREVIATIONS

AB	Assembly Bill
AF	Acre-feet
CSA	Community Service Area
CVP	Central Valley Project
DBCP	Dibromo-Chloropropane
DHS	Department of Health Services
DWR	Department of Water Resources
EDB	Ethylene Dibromide
EHS	Environmental Health System
EPA	Environmental Protection Agency
FCEHD	Fresno County Environmental Health Department
FID	Fresno Irrigation District
FMFCD	Fresno Metropolitan Flood Control District
GAC	Granulated Activated Carbon
GMP	Groundwater Management Plan
HSA	Hydrologic Study Area
ISI	Integrated Storage Investigations
MCWD	Malaga County Water District
MG	Million Gallons
MGD	Million Gallons Per Day
MOU	Memorandum of Understanding
MTBE	Methyl Tertiary-Butyl Ether
NPDES	National Pollution Discharge Elimination System
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SWTP	Surface Water Treatment Plant
TAC	Technical Advisory Committee
TCE	Trichloroethylene
TCP	Trichloropropane
VOC	Volatile Organic Chemicals or Volatile Organic Compounds
WWD	Waterworks District
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 1 - INTRODUCTION

This Groundwater Management Plan (GMP or Plan) is a collaborative effort among nine public agencies and one private water company in the Fresno-Clovis metropolitan and surrounding area. The Plan documents a regional approach toward groundwater management, while still addressing individual goals and issues for each of the participants. The Plan satisfies the new requirements for Groundwater Management Plans created by the September 2002 California State Senate Bill No. 1938, which amended Sections 10753 and 10795 of the California Water Code. The Plan also addresses recommended components for a Groundwater Management Plan described in Appendix C of Department of Water Resources Bulletin 118 (2003 Update).

### 1.1 - Background Information on Regional Group

#### Background

The desire to develop and adopt a regional groundwater management plan for this region came from an effort to involve local stakeholders in development of a groundwater management plan for the Fresno Irrigation District (FID). In 2004, FID intended to update its groundwater management plan to meet SB 1938 requirements and DWR recommendations. In an effort to solicit comment from stakeholders, FID held a public hearing on July 7, 2004, to notify the public of FID's intent to modify its plan. The notice invited landowners and interested parties to make comment at the meeting and participate on a technical advisory committee. No public comments were received at the hearing. FID adopted a Resolution of Intent to Modify its Groundwater Management Plan on July 7, 2004.

A Technical Advisory Committee (TAC) was formed to provide input during preparation of the Plan. The TAC was comprised of local agency representatives and landowners. The first meeting of the TAC was held on November 18, 2004. A review of the new Water Code requirements was provided, as well as the initial expectations of the TAC. At this initial meeting, some of the agency representatives noted that they planned to prepare their own groundwater management plan and some expressed interest in developing a regional plan. It was decided to conduct another meeting with representatives of agencies that have overlapping boundaries with FID to determine the interest of other local stakeholders to participate in a cooperative or regional plan. This meeting was held on January 27, 2005. The meeting addressed the need for an updated plan, the new requirements in the Water Code, the benefits of a regional plan, and discussions on how to proceed with a regional groundwater management plan. From this meeting, it was determined that there was enough interest in developing a regional plan. The attendees at the meeting identified four major reasons for developing a regional plan:

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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- Cooperative groundwater management efforts
- Cost savings with preparing a regional plan and annual groundwater reports
- Inclusion of smaller agencies
- Regional funding opportunities

## Cooperative Effort

Interested parties continued to meet to develop a Memorandum of Understanding (MOU) for preparation of the regional plan. The MOU was drafted and reviewed by each of the agencies, and monthly meetings with the agency representatives and landowners were held. The MOU was presented before each agency's governing body for discussion and public comment. The MOU was then adopted by each of the agencies. A copy of the signed MOU is included in Appendix B.

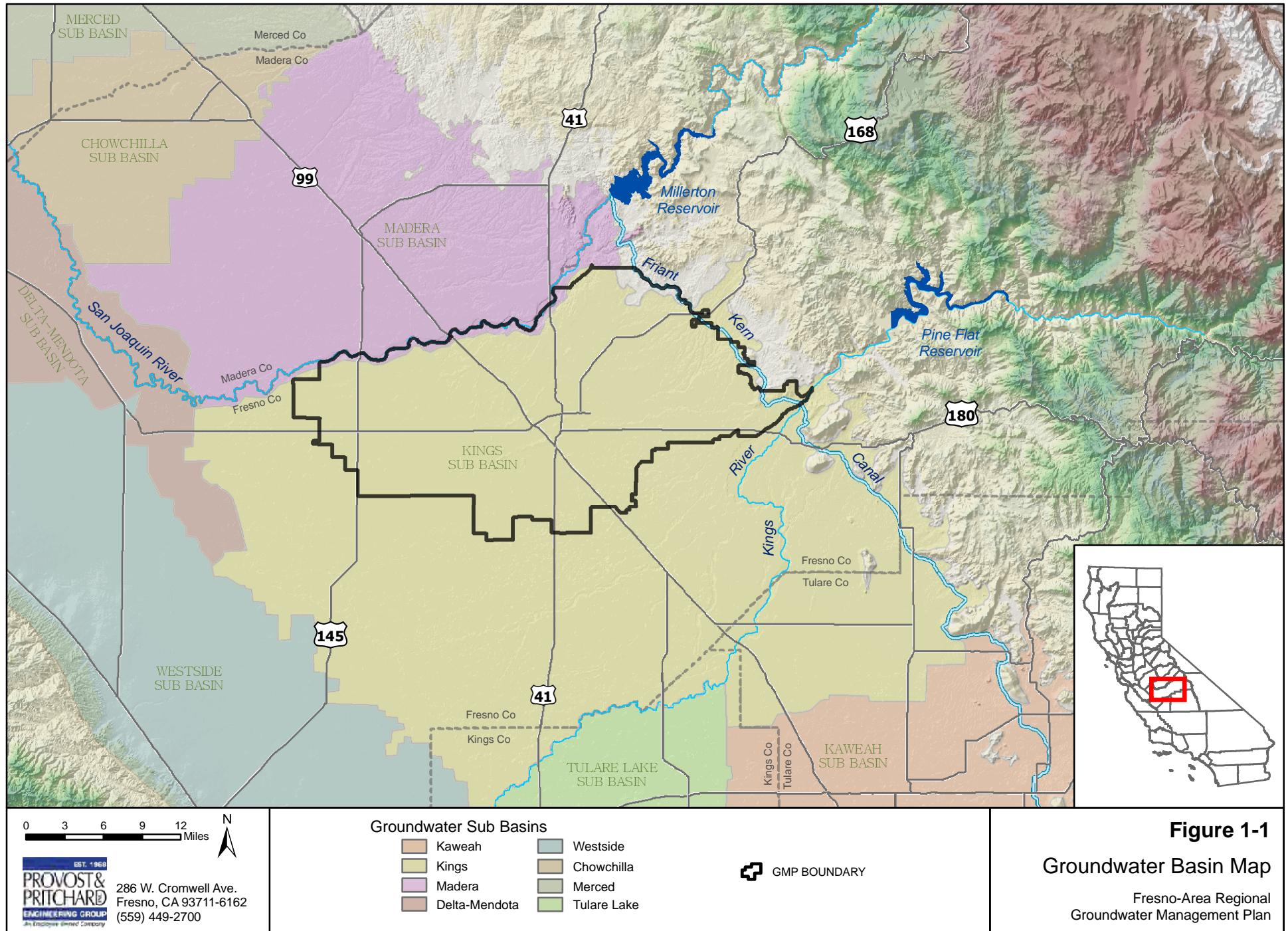
## **1.2 - Plan Area**

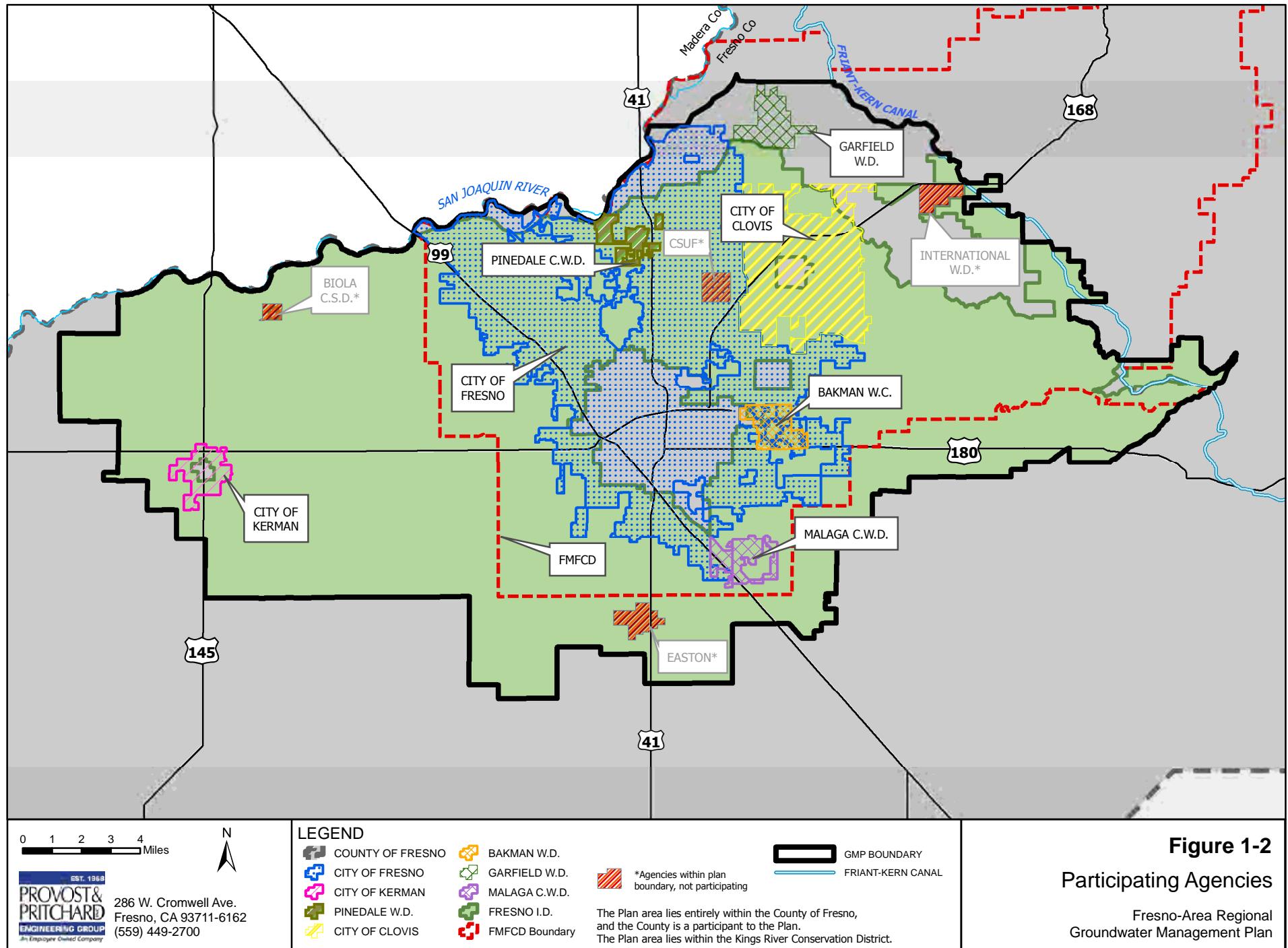
The Plan Area lies within the Kings Groundwater Sub-basin, which lies within the San Joaquin Basin Hydrologic Study Area (HSA). The Kings Sub-basin is also identified as sub-basin 5-22.08 of the Tulare Lake Hydrologic Region in the Department of Water Resources Draft Bulletin 118 updated in 2003, as shown in Figure 1-1. The Plan boundary generally follows the boundary of the Fresno Irrigation District, however it is extended in the northeast along Friant Road to Willow Avenue, then east to the Friant-Kern Canal, then south along the Friant-Kern Canal to FID's boundary near the Kings River. The participants to this Plan include:

- Fresno Irrigation District
- County of Fresno
- City of Fresno
- City of Clovis
- City of Kerman
- Madera County Water District
- Pinedale County Water District
- Fresno Metropolitan Flood Control District
- Bakman Water Company
- Garfield Water District

The participants are described in Section 2 and the Plan boundary and participant boundaries are shown in Figure 1-2. The Plan Area was determined based on the shared aquifer, and includes participants that are within close proximity within the aquifer and are actively managing water resources.

Consistent with provisions of the County's groundwater management plan, it is intended that this Plan supercede the County's existing Groundwater Management Plan only within the Plan Area. The County's existing Plan will still be in effect for the remainder of the County area.





**Figure 1-2**  
**Participating Agencies**  
Fresno-Area Regional  
Groundwater Management Plan

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 1.3 - Purpose for this Groundwater Management Plan

The purpose of this Plan is to implement effective groundwater management that works toward maintaining a high quality and dependable water resource for the water users and landowners within the Plan Area, while minimizing negative impacts to other affected parties. The Plan documents the existing groundwater management efforts in the Plan Area that have been successful. The Plan also develops a coordinated and comprehensive approach to the future evaluation and management of groundwater resources within the Plan Area, in concert with other groundwater management activities within the groundwater basin. The Plan integrates past and present effective groundwater management activities with proposed activities to meet the following objectives:

1. Increase awareness of groundwater management efforts being performed by other local parties.
2. Provide benefits of cost savings for preparation, opportunities for regional funding and grant programs, inclusion of smaller local agencies, and the development of more cooperative groundwater efforts.
3. Allow smaller agencies to participate that otherwise would not have been able to fund the preparation of a GMP.
4. Include participants with overlapping boundaries.

## 1.4 - Previous Plans

Three participants to this Plan have previously adopted Groundwater Management Plans. FID adopted a Groundwater Management Plan in 1995, and the City of Clovis and the County of Fresno each adopted plans in 1997. This Plan supercedes the existing plans for FID and the City of Clovis, as their service areas are included within the Plan boundary. This Plan boundary only covers a portion of the County of Fresno, so at the time of this Plan's adoption, the County's existing plan will still apply to the area outside of this Plan's boundary. Elements from each of the previously adopted plans have been incorporated into this regional plan.

The participants in this Plan also recognize that many of the components of this Plan were previously identified in the Water Resources Management Plan for Fresno-Clovis Urban and Northeast Fresno County prepared by the County of Fresno in 1986 (herein called the 1986 Plan). The 1986 Plan followed the Interim Best Management Plan for Water Quality, Fresno-Clovis Urban and Northeast Fresno County. The 1986 Plan included detailed descriptions of the groundwater quality and quantity conditions within the area, described the water purveyors within the region, and included five of the same participants to this Plan: County of Fresno, City of Fresno, City of Clovis, Fresno Irrigation District, and Fresno Metropolitan Flood Control District. Other water purveyors within the area were described in the Plan, but not included as participants for

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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implementation. The plan area of the 1986 Plan was smaller than the area described in this Plan. The 1986 Plan includes surface water related objectives that are included in this Plan. Many of the activities of the 1986 Plan are still viable and have become a part of on-going operations for the five agencies involved. However, the committees formed to implement the activities proposed in the 1986 Plan have not actively met for many years, and there is a need to review and update the groundwater related activities described in that plan. This Plan is intended to be a continuation of the groundwater related objectives of the 1986 Plan, which included:

1. Preserve and enhance the existing quality of the area's groundwater.
2. Preserve untreated groundwater as the primary source of domestic water.
3. Maximize the available water supply, including conjunctive use of surface water and groundwater.
4. Conserve the water resource for long-term beneficial use and assure an adequate supply for the future.
5. Manage water resources to the extent necessary to ensure reasonable, beneficial, and continued use of the resource.

## **1.5 - Statutory Authority for Groundwater Management**

The California legislature recognized that local groundwater management is preferable to State or Federal groundwater controls, and passed Assembly Bill 255 (AB 255) in 1989. AB 255 was the first statewide legislation allowing local water agencies to prepare and adopt groundwater management plans for their jurisdictions. California Assembly Bill No. 3030 (AB 3030), which became law on January 1, 1993, superceded AB 255, and authorized local agencies that are within groundwater basins, as defined in California Department of Water Resources (DWR) Bulletin 118, to prepare and adopt groundwater management plans. Each of the public agency participants to this Plan meets the requirements of a "local agency", as defined within Section 10752 of the Water Code.

Agencies adopting a Plan are authorized to enter into agreements with other local agencies or private parties to manage mutual groundwater supplies, including those existing in overlapping areas, as necessary to implement the Plan. Bakman Water Company has been an active participant in the development of this Plan, and has entered into the Memorandum of Understanding for its development and implementation.

## **1.6 - Groundwater Management Plan Components**

This Plan includes the required and recommended components for a Groundwater Management Plan as identified in California Water Code Section 10753, et. seq. This Plan is also consistent with the recommended elements for a Groundwater Management Plan as identified in DWR Bulletin 118 (2003), Appendix C. Table 1-1 identifies the location within this document where each of the components is addressed.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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**Table 1-1 – Location of Groundwater Management Plan Components**

Description	Plan Section(s)
<b>California Water Code Mandatory Requirements (10750 et seq.)</b>	
1. Documentation of public involvement	Appendix A, 1.1, 1.7
2. Groundwater basin management objectives	1.3, 4
3. Monitoring and management of groundwater elevations, groundwater quality, land subsidence and surface water	6
4. Plan to involve other agencies located in the groundwater basin	5.3
5. Monitoring protocols	6.3
6. Map of groundwater basin and agencies overlying the basin	Figure 1-1, 1-2
<b>California Water Code Voluntary Components (10750 et seq.)</b>	
7. Control of saline water intrusion	7.4
8. Identification and management of wellhead protection areas and recharge areas	7.3, 8.1
9. Regulation of the migration of contaminated groundwater	7.4, 7.5, 8.5
10. Administration of well abandonment and well destruction program	7.1
11. Mitigation of conditions of overdraft	8
12. Replenishment of groundwater extracted by water producers	8.1
13. Monitoring of groundwater levels and storage	6.1
14. Facilitating conjunctive use operations	8.4
15. Identification of well construction policies	7.2
16. Construction and operation by local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects.	7.5, 8.1, 8.2, 8.4, 8.5, 8.6
17. Development of relationships with state and federal regulatory agencies	5.2, 5.3
18. Review of land use plans and coordination with land use planning agencies	9.1
<b>Additional Components Recommended by DWR (App. C of Bulletin 118)</b>	
19. Advisory committee of stakeholders	1.1, 5.1
20. Description of the area to be managed under the Plan	1.2, 2, 3
21. Descriptions of actions to meet management objectives and how they will improve water reliability	4 - 9
22. Periodic groundwater reports	9.2
23. Periodic re-evaluation of Groundwater Management Plan	9.4

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 1.7 - Adoption of Plan

### Public Notice of Intention to Modify/Prepare a Regional Groundwater Management Plan

As required by the California Water Code, a public hearing was duly noticed on July 26, 2005 and August 2, 2005 consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss adoption and implementation of the regional Plan. No public comments were received at this meeting.

### Resolution of Intention to Modify/Prepare a Regional Groundwater Management Plan

Each agency adopted a Resolution for Intention to Modify/Prepare the Fresno-Area Regional Groundwater Management Plan. A copy of each agency's resolution is included in Appendix A. This resolution was then published on December 20, 2005 and December 27, 2005 consistent with California Water Code Section 10753.2(a).

### Public Participation in Plan Development

The public was invited to participate in the development of the updated Groundwater Management Plan through the newspaper notices and the public hearing. The draft regional plan was then prepared with input from a Technical Advisory Committee (TAC). The Technical Advisory Committee includes landowners and representatives from each party participating in the plan. In October 2005, the Technical Advisory Committee included:

- Dale Stanton, Assistant General Manager, Fresno Irrigation District
- Bill Stretch, District Engineer, Fresno Irrigation District
- Lon Martin, Water Division Manager, City of Fresno
- Brock Buche, Water Division, City of Fresno
- Lisa Koehn, Assistant Utilities Director, City of Clovis
- Alan Weaver, Public Works Director, County of Fresno
- Phil Desatoff, Geologist, County of Fresno
- Jerry Lakeman, Fresno Metropolitan Flood Control District
- Alan Jacobsen, Public Works Director, City of Kerman
- Tim Bakman, Bakman Water Company
- Russ Holcomb, General Manager, Madera County Water District
- John Garcia, General Manager, Pinedale County Water District
- Richard Carstens, Landowner
- Chris Palmer, Landowner

Following the public hearing regarding the intent to prepare and adopt the Plan, the Garfield Water District (Garfield) expressed an interest in participating in the Plan. The TAC and participants agreed to Garfield's participation. Garfield provided a Letter of Intent to Participate in the plan, and Exhibit 2 of the MOU was updated to include Garfield, as shown in Appendix C. Garfield held a public hearing on December 8, 2005 regarding intent to participate in the Plan. The meeting was publicly noticed on

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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November 26, 2005. Garfield's Board of Directors adopted the Resolution of Intent to Prepare and Adopt the Fresno-Area Groundwater Plan on December 8, 2005.

## Public Notice of Intention to Adopt a Regional Groundwater Management Plan

As required by the California Water Code, a public hearing was duly noticed on January 10, 2006 and January 17, 2006, consistent with California Water Code Section 10753.2(a), and held on January 25, 2006 to discuss adoption and implementation of the regional Plan.

## Resolution Adopting the Regional Groundwater Management Plan

Each agency adopted a Resolution for Adoption of the Fresno-Area Regional Groundwater Management Plan. A copy of each agency's resolution is included in Appendix B. A listing of the date of adoption by each agency is shown below.

Adopted by:

On:

Fresno Irrigation District	01/25/2006
City of Clovis	02/13/2006
Bakman Water Company	03/13/2006
County of Fresno	07/18/2006
City of Fresno	04/18/2006
Pinedale County Water District	09/20/2006
Fresno Metropolitan Flood Control District	02/08/2006
City of Kerman	03/01/2006
Malaga County Water District	02/14/2006
Garfield Water District	11/01/2006

## Public Notice of Resolutions Adopting the Regional Groundwater Management Plan

Notice of the resolutions adopting the Fresno-Area Regional Groundwater management Plan was published on November 24, 2006 and December 1, 2006 consistent with California Water Code Section 10753.2(a).

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 2 - PARTICIPANT INFORMATION

Nine public agencies and one private water company in the Fresno-Clovis metropolitan and surrounding area have collaborated to develop this Plan. The Plan Area covers 455 square miles and is located entirely within Fresno County. The total population in the Plan Area in 2000 was approximately 600,000, according to recent census data. Refer to Figure 1-2 for a map showing the Plan Area boundary and the location of each participant. Table 2-1 summarizes the background information on each of the Plan participants. Figure 2-1 shows the major surface water facilities in the Plan Area, including canals, pipelines, streams, and flood control basins. Following is a brief description of each participant including information regarding the history, demographics, water supply, water quality, and facilities of each.

### 2.1 - Fresno Irrigation District

The Fresno Irrigation District (FID or District) is a public irrigation district formed pursuant to the California Irrigation District Law (Division 11 of the California Water Code). The District was formed in 1920 as the successor to the privately owned Fresno Canal and Land Company. The District is a local agency responsible for delivery of surface water to lands within the District, and management of groundwater in accordance with this adopted Groundwater Management Plan.

FID is located in the geographical center of Fresno County and extends from the San Joaquin River in the north, south to near the City of Fowler, and roughly from the Friant-Kern Canal to about five miles west of the City of Kerman, as shown in Figure 1-2. The District service area is approximately 245,000 acres (about 380 square miles) and includes the Fresno/Clovis metropolitan area near its center. The District now operates approximately 680 miles of canals and pipelines. Water delivery is provided to approximately 190,000 acres, although this number has been decreasing in recent years as a result of urban expansion.

Potable water is used within the District boundary for municipal, industrial and agricultural purposes. The District delivers approximately 500,000 acre-feet (average annual) of water from the Kings River and Central Valley Project water through the Friant-Kern Canal. Most of this water is delivered to agriculture, although an increasing share of the District's water supply is used for groundwater recharge in the urban area. In 2004, FID began delivery of surface water to surface water treatment facilities operated by the City of Fresno and the City of Clovis. In addition to surface water deliveries, a significant amount of groundwater pumping occurs in the District to meet urban and agricultural demands.

The agricultural lands in the District remain predominantly permanent crops, however the rapid growth of urban development is changing the land use in the Fresno/Clovis

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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metropolitan area. About 150,000 acres (or 60%) of the District remains as farmed agricultural land. Vineyards make up the largest category of farmland at nearly 30% of the total District acreage. Almonds and citrus are other significant categories. Nearly 30% of the District is now urban, with the remaining 10% of land area classified as rural residential.

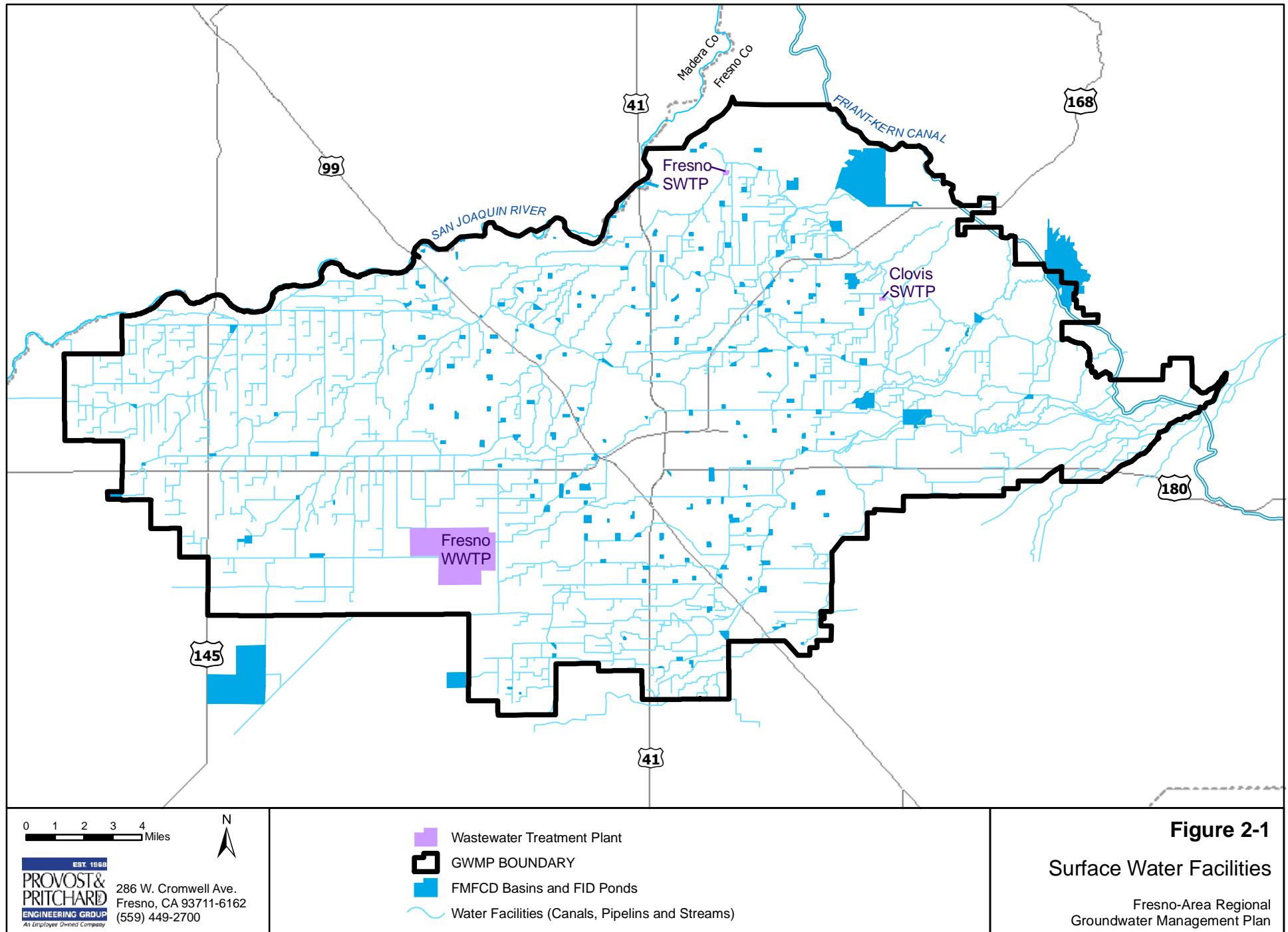
## **2.2 - Fresno County**

Fresno County was established in 1856 and covers 6,016 square miles extending from the Sierra Nevada mountains to the west side of the San Joaquin Valley. The County population was 824,000 in 2000. The area covered in this Plan (455 square miles) lies entirely within Fresno County. Hence, only a portion of Fresno County is addressed in this Plan, although it is generally the most densely populated area in the County.

Fresno County supplies potable water to communities in the Plan Area through six Community Service Areas (CSAs) and one Waterworks District (WWD). The CSAs and WWD have 14 active wells; one of the CSAs is connected to the City of Fresno water system. County staff monitors groundwater levels and groundwater quality in cooperation with CSA and WWD staff. In rural areas, water is supplied from private domestic wells and sewerage is handled almost exclusively with septic systems. Constituents of concern in Fresno County include nitrates, DBCP, radionuclides, and EDB.

Along the eastern border of the Plan Area, groundwater is limited to fractured zones deep within the underlying bedrock. Locating sustainable groundwater supplies in these areas has been problematic in recent years.

Though dated, significant information on the groundwater in Fresno County can be found in the *Water Resources Management Plan for Fresno-Clovis Urban and Northeast Fresno County*, prepared in 1986 by Fresno County.



# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 2.3 - City of Fresno

The City of Fresno was founded in 1885 and had a population in 2003 of 457,000. The total area of the City is 102.5 square miles, but the City only serves water to 87.2 square miles. The City of Fresno serves customers located within the city limits, as well as in some unincorporated areas (county islands). The City of Fresno has and continues to be one of the fastest growing cities in California.

The City of Fresno supplies water to residential, commercial, industrial and landscape irrigation customers. The City does not provide water for any agricultural purposes. In 2005, the City had 120,399 connections, and 14% of the connections were measured. Since water is metered for all of the large water users, 33% of total water deliveries are measured.

The City of Fresno's primary source of water is groundwater from the Fresno Sole Source Aquifer, a large underground aquifer. The City of Fresno's domestic water system is somewhat unique for a water system of its size. Prior to beginning a new 30 million gallons per day (MGD) surface water treatment plant (SWTP) in 2004, the Fresno water system was one of the largest water systems in the United States relying solely on pumped groundwater as its only source of potable water. The total water pumped from Fresno's 250 wells exceeded 54 billion gallons (166,000 AF) in 2003.

The City of Fresno also has two surface water supplies: 60,000 AF of CVP water from the Friant system (San Joaquin River) and more than 100,000 AF (average annual) from the Kings River through a contract with FID. Since the mid-1960's surface water from these rivers has been imported to the City of Fresno via FID canals and placed into groundwater recharge basins. In cooperation with FID and FMFCD, the City of Fresno currently diverts more than 40,000 acre-feet of surface water per year to more than 70 basins throughout the Plan Area for the purposes of groundwater recharge. More than 40,000 AF was recharged during the 2005 irrigation season. Surface water is now also conveyed to the City's new SWTP located in northeast Fresno.

The City of Fresno measures water levels on a quarterly basis and performs water quality testing according to Department of Health Service (DHS) requirements. Eight major contaminant plumes are present in Fresno, and they are being addressed by the responsible parties through assessment and remediation, and some are in advanced stages of mitigation. The inorganic plume contaminants include chloride, nitrate, arsenic, and chromium. Organic plume contaminants include petroleum hydrocarbons and methyl tertiary-butyl ether (MTBE), chlorinated volatile organic chemicals (VOCs), Dibromo-Chloropropane (DBCP) and other pesticides, and trichloropropane (TCP). The City currently has 32 active municipal wells that are treated for DBCP or TCE.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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For more information on groundwater in the City of Fresno refer to the City of Fresno Water Conservation Plan (2005), the Fresno Metropolitan Water Resources Management Plan (1992), and the Fresno Municipal Code, Chapter 14, Water Regulations.

## 2.4 - City of Clovis

The City of Clovis (Clovis) is located in eastern Fresno County, just east of the City of Fresno. Clovis was incorporated in 1912 and now covers an area of 19.76 square miles. The population of Clovis in 2005 was 86,215. Clovis also delivers domestic water to the unincorporated area known as Tarpey Village, which in 2005 has a population of 3,957.

In 2004, groundwater pumping in Clovis was about 7,500 MG (23,000 AF). Clovis has 36 active wells; other wells have been abandoned due to low yields, sanding, or contamination problems. Some wells have facilities for granulated activated carbon (GAC) treatment. Clovis monitors groundwater quality according to DHS requirements, and monitors groundwater levels semi-annually.

Clovis lies on the eastern side of a large cone of depression that underlies the Fresno-Clovis Metropolitan area. In 1997, groundwater overdraft was estimated to be 2,500 AF/year. This amount has increased due to rapid urban growth and a corresponding increase in groundwater demand. Clovis performs intentional groundwater recharge using Kings River water derived from entitlements through FID. The annual surface water entitlement for Clovis currently is over 20,000 AF in an average year. Recharge is performed in single purpose recharge basins owned by Clovis, dual-purpose storm drainage basins owned by the Fresno Metropolitan Flood Control District (FMFCD), and local channels including Dry Creek, Redbank Creek, and Dog Creek. More than 9,000 acre-feet of surface water is currently recharged annually.

In 2004, Clovis also constructed and placed into operation a 15 MGD capacity surface water treatment plant. The plant is providing treated surface water to the easterly portion of Clovis. Clovis, in cooperation with FID, also has areas where surface water from FID's canal system is directly delivered to areas of large landscaping such as cemeteries, schools and parks.

For additional information on the groundwater resources in Clovis refer to the following reports prepared by Provost and Pritchard Engineering Group: *City of Clovis Groundwater Recharge Investigation Report* (1997) and *Groundwater Monitoring and Recharge Investigation Project* (2003).

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 2.5 - City of Kerman

The City of Kerman (Kerman) is located in central Fresno County, near the western edge of the Plan Area. Kerman was incorporated in 1946 and had a population of 11,500 in 2004. Kerman occupies 2.5 square miles and the surrounding area is predominantly an agricultural community.

Kerman serves urban water to residential (2,104), commercial (307) and industrial (7) connections. All of Kerman's water supplies come from locally pumped groundwater and the City does not have the water rights for any surface supplies. In 2004, Kerman pumped a total of 988 million gallons (3,030 AF) of groundwater. Kerman has four active wells and one well on standby. The construction of two new wells is planned for 2006. Planned improvements will be capable of meeting projected water demands through 2011. Kerman is also developing a groundwater recharge partnership with FID. The program would place combination flood control/recharge basins close to FID conveyance facilities.

Groundwater is available to Kerman from a deep aquifer, beneath the Corcoran Clay, and a shallow aquifer above the Corcoran Clay. The shallow aquifer sometimes has high levels of uranium. Kerman is experiencing accelerated urban growth and expects new developments to rapidly increase water demands. As a result, Kerman is investigating surface water supplies, or the use of water from the shallow aquifer for landscaping, as alternatives for meeting the growing demand.

For more information on Kerman's water supplies and facilities refer to the *City of Kerman Capital Improvement Plan* prepared by Yamabe and Horn in 2004.

## 2.6 - Malaga County Water District

Malaga County Water District (Malaga or District) is a water and wastewater utility district covering 2.3 square miles just south of the City of Fresno. Malaga began delivering water in 1965 and now serves a residential population of about 1,300 from 224 residential connections and 220 industrial/commercial connections. Residential development in Malaga is nearly complete; existing zoning and readily available land allow for continued commercial and industrial development. All new industrial and commercial enterprises will be required to connect to the District water system.

Since 1982 the demand for water has generally been increasing. Malaga depends entirely upon groundwater to meet its water needs, and, in 2003, District wells supplied 602 million gallons (1,848 AF). However, there is no pumping data available for the many private wells in the area. Malaga is currently in discussions with neighboring agencies to participate in groundwater recharge projects to replenish the groundwater supplies.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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Malaga has three active wells and two that have been removed from service due to a variety of contamination problems, including nitrates and DBCP's. Malaga also operates a wastewater treatment plant (WWTP) with a capacity of 1.2 MGD. Effluent from the WWTP is delivered to percolation ponds. If necessary, tertiary treated overflow is discharged into FID's Central Canal.

Additional information on Malaga's facilities, water usage, and groundwater quality can be found in the *2004 Malaga County Water District Water Supply Report* prepared by Provost and Pritchard Engineering Group.

## **2.7 - Pinedale County Water District**

Pinedale County Water District (PCWD or Pinedale) was formed in 1954 and presently delivers water to approximately 2,400 residential and 550 commercial customers. Pinedale covers 1.7 square miles and is located in the north central portion of the Plan Area, with portions of the district in the City of Fresno and unincorporated Fresno County. Some areas in Pinedale remain undeveloped, and consequently water demands are expected to increase as the lands are occupied.

Pinedale has five active wells, but typically only needs to operate three to meet current water demands. Some other wells in Pinedale are no longer used due to TCE contamination. No treatment or chlorination is presently performed on a regular basis on any of the pumped groundwater. Pinedale monitors groundwater quality according to DHS requirements. Pinedale does not presently monitor groundwater levels.

Pinedale also collects sewage and delivers it to the Fresno sewerage system, except for an area in the northwest portion of the district where sewerage is collected by the Pinedale Public Utilities District. About 20 residential units in the eastern portion of Pinedale are still on underground septic systems.

## **2.8 - Fresno Metropolitan Flood Control District**

The Fresno Metropolitan Flood Control District (FMFCD) was founded in 1956 to provide flood control, local storm drainage management, water conservation, and recreational services in the Fresno-Clovis Area. The district is located in the north-central portion of Fresno County between the San Joaquin and Kings Rivers. FMFCD is authorized to control storm waters within an urban area and rural foothill watersheds of approximately 400 square miles, known as the Fresno County Stream Group. About 270 square miles of the service area lies within the area covered by this Groundwater Management Plan.

The FMFCD currently has three reservoirs, five regional flood control detention basins planned, and 163 local basins constructed or in planning. The principal method of disposal of stormwater in the area is groundwater recharge at all of these basins.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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FMFCD monitors water deliveries to flood control/recharge basins and tests the chemical composition of sediments that collect in basins. FMFCD does not presently monitor groundwater levels or groundwater quality.

FMFCD is the lead agency for stormwater quality management and has primary responsibility for implementing a Stormwater Quality Management Program developed jointly with the City of Clovis, City of Fresno, County of Fresno, and California State University at Fresno. FMFCD has been involved with the Nationwide Urban Runoff Program (NURP) project, in conjunction with the Environmental Protection Agency (EPA). The goal of the program was to determine the extent to which urban runoff contributes to water quality problems and evaluate various management practices.

FMFCD maintains as its first operational priority the protection of people and property from flood damage. However the FMFCD also aims to conserve water by (1) retaining storm water runoff in basins to facilitate storm water percolation; and (2) cooperating with the Cities of Fresno and Clovis to direct imported surface water entitlements to District facilities for percolation.

For more information on FMFCD refer to the *FMFCD District Services Plan* prepared in 2004.

## **2.9 - Bakman Water Company**

Bakman Water Company (Bakman) is a privately owned utility that has provided water service to the Fresno area since 1948. Bakman delivers water to approximately 1,800 connections serving 10,000 customers. Bakman's service area covers 1,660 acres within the southeastern portion of the City of Fresno and parts of unincorporated Fresno County.

Bakman is currently negotiating a contract with FID for a surface water allotment. Bakman does not have any other contract for surface water to be treated and delivered to its customers, and therefore delivers pumped groundwater to its customers. Bakman pumped a total of 1,270 MG (3,900 AF) of water in 2003. Water is served to residential and commercial customers. Bakman currently has ten active wells, three standby wells, and three inactive wells. Numerous private wells are found in the Bakman service area. However, new developments are required to connect to the Bakman water system.

Water quality concerns in Bakman include nitrate contamination from food processing industries and DBCP. Due to these water quality concerns, three wells have been classified as "standby wells" in accordance with Department of Health Services (DHS) standards. Blending and GAC treatments are working at other wells to reduce nitrate and DBCP concentrations within Bakman's boundary. All wells are plumbed and wired to allow for emergency chlorination.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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In 1991, Bakman signed an agreement with FID to fund groundwater recharge projects in FID through an annual payment. In addition, Bakman is presently pursuing groundwater recharge projects within its boundaries.

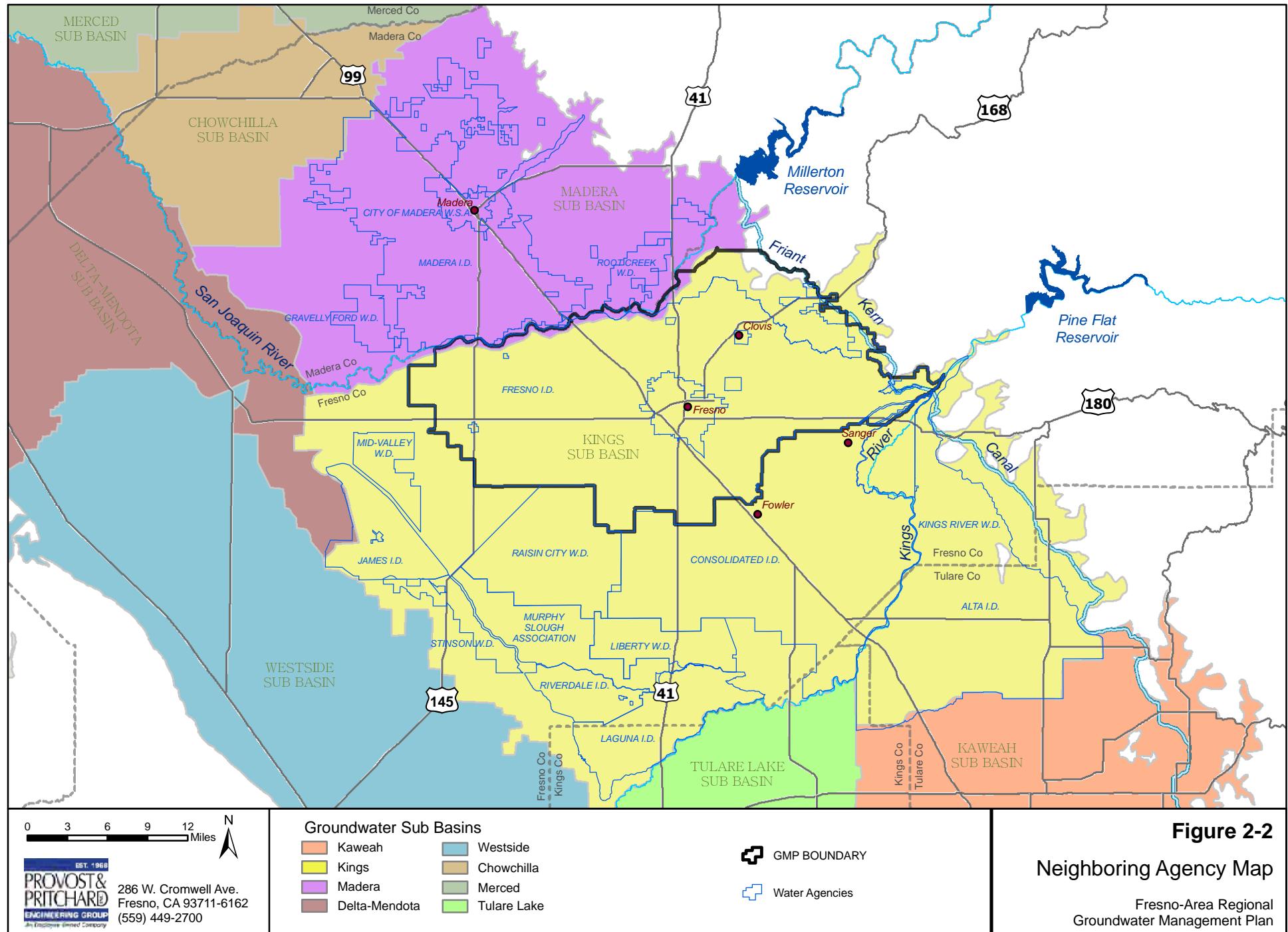
## **2.10 - Garfield Water District**

Garfield Water District (Garfield) delivers surface water for agricultural uses to approximately 1,300 of the 1,750 acres within the District. Garfield recently entered into a Long-Term Renewal Contract with the United States for Project Water Service from the Friant Division. The contract is for 3,500 acre-feet of Class 1 water. Water deliveries to Garfield are made from a turnout on the Friant-Kern Canal, and metered delivery is made to the growers via a pipelined system. The predominant crops in Garfield are grapes, almonds, citrus, olives and stone fruits.

Garfield does not own nor operate any wells. All groundwater within Garfield is pumped from privately owned wells.

## **2.11 - Surrounding Area**

Although not Plan participants, the neighboring water agencies shown in Figure 2-2 will be kept apprised of groundwater projects and policies that may impact them. Lands to the south and west of the Plan Area are particularly important since they are downgradient and located in the same groundwater sub-basin. Lands to the north share less hydrologic connection due to the partial hydraulic barrier created by the San Joaquin River.



**TABLE 2-1**

**FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**  
**SUMMARY OF PARTICIPANTS**

Description	Fresno Irrigation District	Fresno County	City of Fresno	City of Clovis	City of Kerman	Malaga County Water District	Pinedale County Water District	Fresno Metro. Flood Control District	Bakman Water Company
Address	2907 South Maple, Fresno, CA, 93725	2220 Tulare St, 7th Floor, Fresno, CA 93721	1910 East University Ave., Fresno, CA 93703-2988	155 N. Sunnyside Ave. Clovis, CA 93611	850 S. Madera, Kerman, CA 93630	3580 S. Frank St., Fresno, CA 93725	480 W. Birch Avenue, Pinedale, CA 93650	5469 E. Olive Avenue, Fresno, CA 93727	PO Box 7965, Fresno, CA, 93747
Website	<a href="http://www.fresnoirrigation.com">www.fresnoirrigation.com</a>	<a href="http://www.co.fresno.ca.us">www.co.fresno.ca.us</a>	<a href="http://www.ci.fresno.ca.us">www.ci.fresno.ca.us</a>	<a href="http://www.ci.clovis.ca.us">www.ci.clovis.ca.us</a>	-	-	-	<a href="http://www.fresnofloodcontrol.org">www.fresnofloodcontrol.org</a>	<a href="http://www.bakmanwater.com">www.bakmanwater.com</a>
Gross Area (square miles)	387	6,016 (455 within Plan area)	103	19.8	2.5	2.3	1.7	400 (— within Plan area)	2.4
Formation Date	1920	1856	1885	1912	1946	1965	1954	1956	1948
Population Served <sup>(1)</sup>			466,200	90,000	11,500	1,300			10,000
Water Users	Agriculture, Urban	Urban	Urban	Urban	Urban	Urban	Urban	Urban	Urban
Production Wells <sup>(2)</sup>	0	14	250	36	4	3	5	0	11
Groundwater Pumping - Volume (year)	0		54,000 MG (2003)	7,500 MG (2004)	990 MG (2004)	600 MG (2003)		None	1,270 MG (2003)
Primary Constituents of Concern		Nitrates, DBCP, radionuclides, EDB	Nitrate, arsenic, petro hydrocarbons, VOCs, DBCP, TCP	DBCP, nitrates, TCP	Uranium	Nitrate, DBCP	TCE	Various urban runoff contaminants	Nitrate, DBCP
Groundwater Level Monitoring Program	Y	Y	Y	Y	Y	Y	N	N	Y
Groundwater Quality Monitoring Program	N	Y	Y	Y	Y	Y	Y	Y (monitors storm water quality)	Y

(1) The 'Population Served' is the approximate population that the agency shown is provided.

(2) Only includes active wells owned and operated by the participant. Does not include private wells in the participant's area.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 3 - GEOLOGY AND HYDROGEOLOGY OF THE FRESNO AREA

This section provides a brief summary of the geology, hydrogeology, and groundwater conditions in the Plan Area. For additional details refer to the reports listed in Section 10 - References.

### 3.1 - Geology

The largest geomorphic features in the Plan Area are two high fans deposited by the San Joaquin River and Kings River. A compound alluvial fan of intermittent streams between the two rivers also extends southwesterly from the northeast portion of the Plan Area. Unconsolidated alluvial deposits comprised of layers of cobbles, gravel, sand, silt and clay comprise the aquifer. Highly permeable, coarse-grained deposits of the ancestral San Joaquin and Kings Rivers underlie most of the area. These deposits comprise Quaternary age alluvium and the underlying Quaternary-Tertiary Continental deposits. These deposits are present above a depth of 350 to 400 feet below land surface and are tapped by most large-capacity wells in the area.

The Tertiary-Quaternary age continental deposits are composed mainly of the fine-grained sands, silts, and clays with some lenses of coarse-grained deposits. The thickness ranges from a feather edge in the east to more than 1,300 feet in the west. These deposits generally yield less groundwater to wells compared to the overlying more permeable deposits.

### 3.2 - Hydrogeologic Characteristics

#### Groundwater Basin

The Plan Area lies within the Kings Groundwater Sub-basin, which is located within the San Joaquin Basin Hydrologic Study Area (HSA). The Kings Sub-basin is also identified as sub-basin 5-22.08 of the Tulare Lake Hydrologic Region in the DWR Bulletin 118 updated in 2003. The Kings Sub-basin extends from the Sierra Nevada foothills on the east to the San Joaquin Valley trough on the west, and from the San Joaquin River on the north to roughly the Fresno County line on the south. Refer to Figure 1-1 for the location of each participant in relation to the Kings Sub-basin. The Kings sub-basin has been identified as critically overdrafted, as identified in DWR Bulletin 118-80.

#### Aquifer Characteristics

Most of the aquifer underlying the Plan Area is generally unconfined but may be semi-confined in some locations due to localized, fine-grained, low permeability layers. For much of the Plan Area there are no extensive low permeability units to isolate deep aquifers from shallow aquifers. At the west edge of the Plan Area, near the City of Kerman, there is an area underlain by the Corcoran Clay.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## Groundwater Levels

Groundwater levels in the Plan Area range from about 10 feet to 400 feet below the ground surface. A large cone of depression under the Fresno/Clovis metropolitan area has developed. Figure 3-1 is a chart illustrating the decline in average water level in the Plan Area in recent years. Figure 3-2 shows hydrographs of selected wells within the Plan Area, showing the decline in groundwater levels for wells in the Fresno/Clovis metropolitan area since the 1950's. There is also a mound that has formed in the area of the Fresno-Clovis Regional Wastewater Treatment Facility located south and west of the City of Fresno.

## Groundwater Movement

Historically, groundwater moved from northeast to southwest. More recently, the heavy municipal and agricultural pumping in the area has influenced the natural groundwater flow. The pumping cone of depression has caused the southwesterly flows to decrease and flows are generally deflected into the urban area. Figure 3-3 shows recent groundwater levels within the Plan Area.

## Transmissivity

The ability of an aquifer to transmit groundwater is measured by its transmissivity. Transmissivity is defined as the quantity of groundwater that would move through a one-foot-wide section of the total thickness of the aquifer under a unit hydraulic gradient. Transmissivity in the Plan Area is spatially distributed with the highest transmissivity in the northwest. Well yields are higher in the northwestern and southwestern portions of the Plan Area. The well yields in the northeast are limited because a thinner aquifer is present above bedrock.

## Specific Yield

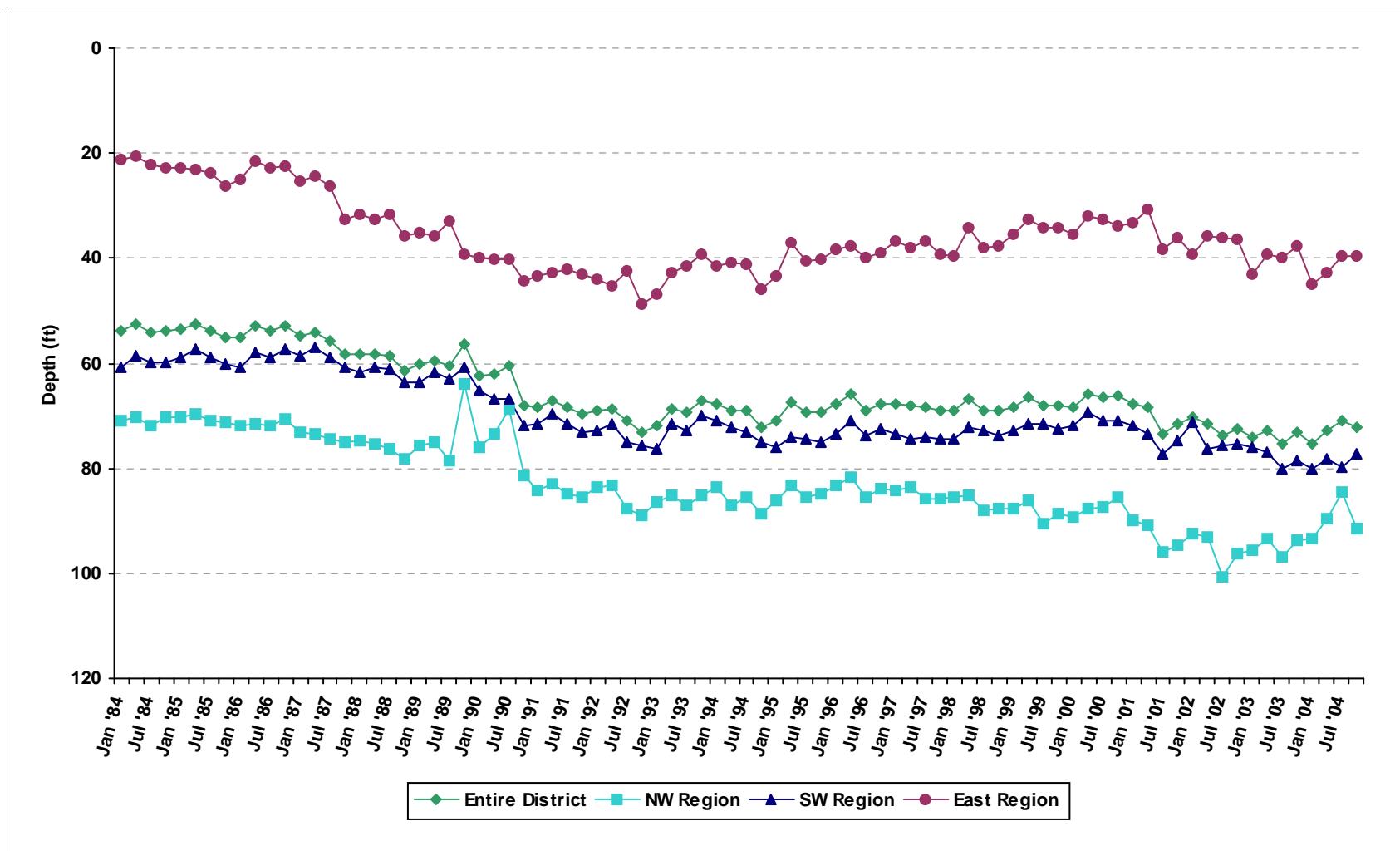
The ability of an aquifer to store groundwater is measured by its specific yield. Specific yield is defined as the quantity of groundwater that could be extracted from a unit volume of aquifer per unit decline in water level. The specific yield of an aquifer is important for evaluating the response of an aquifer to pumping. For example, if the specific yield is known, analysis of well hydrographs can be used to monitor the quantity of groundwater in storage in the reservoir. Estimates of specific yield of the older alluvium range from 0.15 to 0.20. Average values for the underlying continental deposits are estimated to range from 0.07 to 0.12.

## Groundwater Development

The most favorable subsurface geologic conditions for the future development of groundwater are in the northwest Fresno area. Subsurface geologic conditions limit groundwater development in the northeast because of shallow bedrock north and northeast of Clovis and the predominance of fine-grained deposits at depth beneath these areas.

**Fresno Irrigation District Regional  
Quarterly Weighted Average  
Depth To Groundwater**

1/1/1984 To 10/1/2004



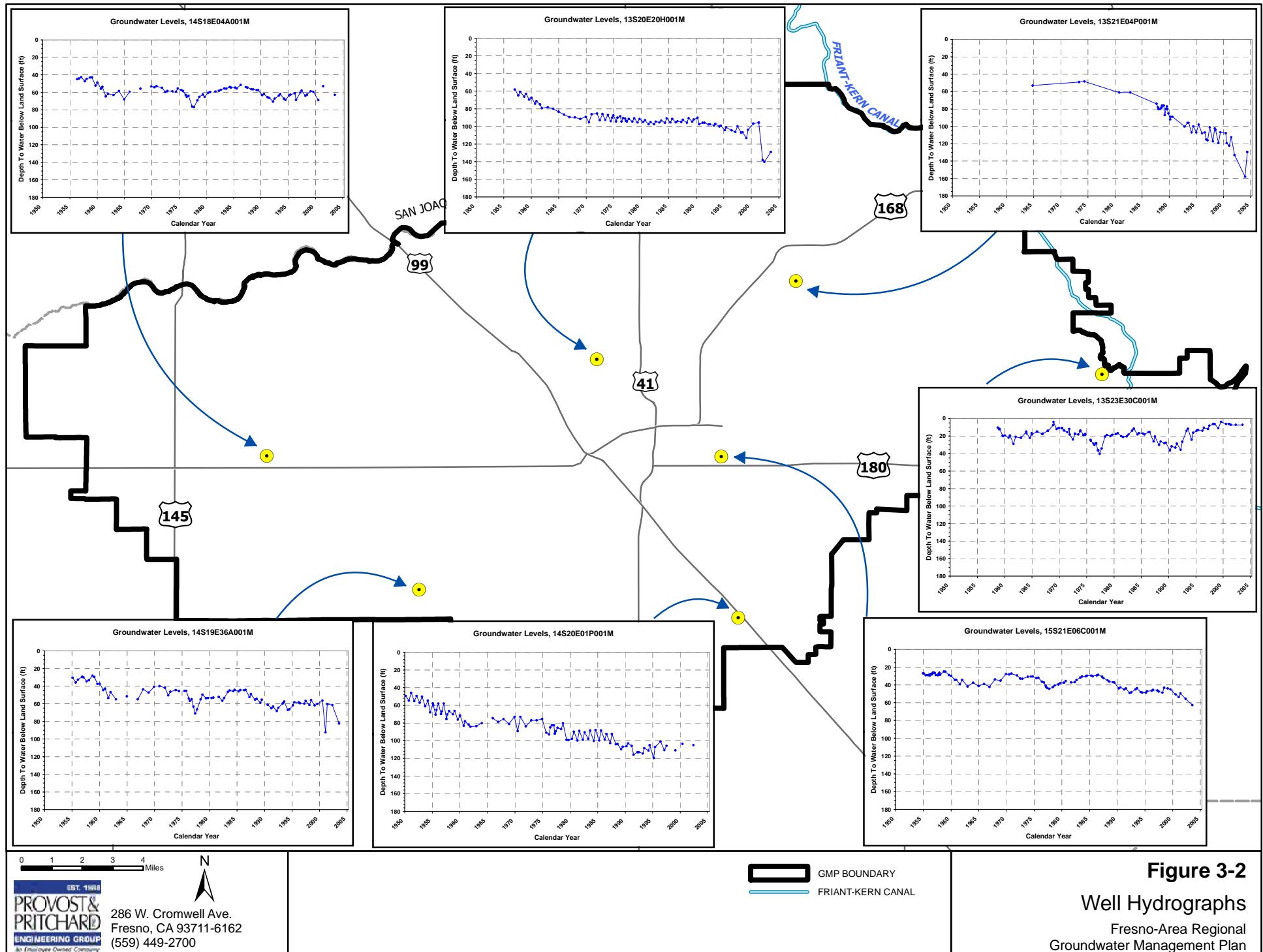
Printed On: 11/11/2005

\*NW Region is north of Belmont Ave, west of Fowler Ave

\*SW Region is south of Belmont Ave, west of Fowler Ave

\*East Region is east of Fowler Ave

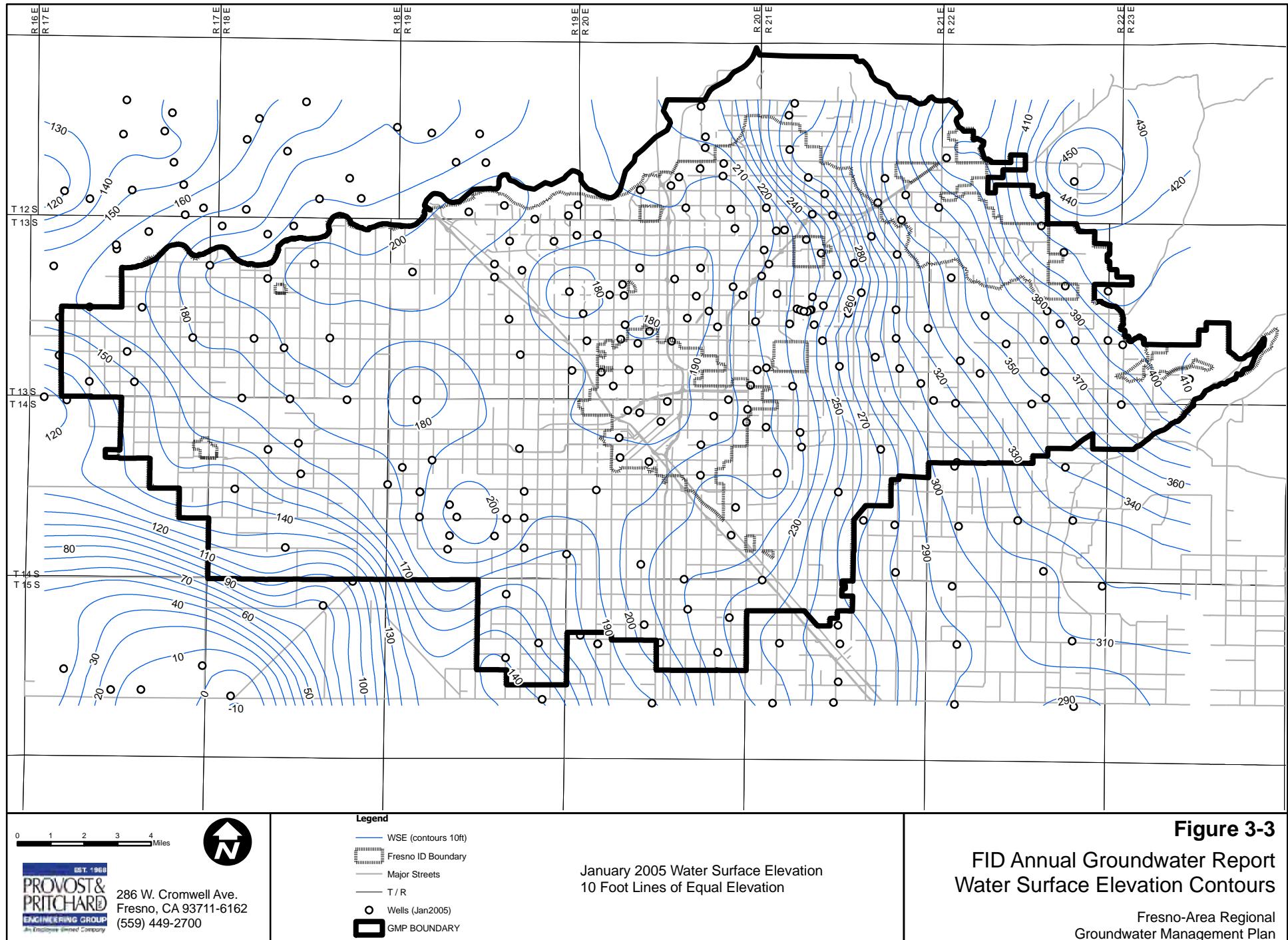
**Figure 3-1**



**Figure 3-2**

## Well Hydrographs

Fresno-Area Regional  
Groundwater Management Plan



# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## Intentional Recharge

Subsurface geologic conditions are favorable for intentional recharge basins beneath the much of the Plan Area. Conditions are less favorable beneath part of the northeast portions of the Plan Area because of the restricting layers above the water table.

Substantial operational information on average infiltration rates is available from stormwater management basins managed by the Fresno Metropolitan Flood Control District. Typical infiltration rates range from about one-third to one-half foot per day. Much of this water is observed to move laterally in highly permeable deposits.

## **3.3 - Groundwater Conditions within the Plan Area**

A combination of surface water supplies and groundwater pumping are used to satisfy the water demands of the area. In agricultural areas, the difference between surface deliveries and the agricultural crop requirements is met by supplemental groundwater pumping almost exclusively by private individual landowners. For many years, all municipal and industrial demands were met entirely from groundwater pumping. However, both the City of Clovis and City of Fresno have recently begun operation of surface water treatment plants.

The Plan participants have long recognized the importance of preserving and maximizing groundwater supplies within its boundaries. Some participants have actively facilitated groundwater recharge and groundwater banking, and have engaged in indirect or "in lieu" recharge programs by delivering surplus surface water whenever possible to minimize groundwater extractions.

Water level measurements taken within the Plan Area show a continued downward trend in the groundwater elevations.

Some areas within the Plan Area's service area suffer from groundwater quality degradation, particularly where the groundwater is used as a potable water supply. Some areas have identified "plumes" of contamination resulting from discharges of industrial or agricultural contaminants, and in some instances groundwater quality has been degraded to below that required by applicable regulatory standards. While most groundwater within the Plan Area is still of acceptable quality, these contamination plumes could spread if not properly managed and controlled.

## **3.4 - Historic Groundwater Monitoring Programs**

Several groundwater studies of the Plan Area have been performed since 1930. These studies are conveniently summarized in the *Water Resources Management Plan for Fresno-Clovis Urban and Northeast Fresno County* (1986) prepared in a cooperative effort by the County of Fresno, the Cities of Clovis and Fresno, the Fresno Irrigation

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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District, and the Fresno Metropolitan Flood Control District. Most of these studies focused on water quality with the remainder focusing on groundwater levels and storage. Geologic and hydrogeologic information for the Plan Area is described in the U.S.G.S. Open File Report, *Geology, Hydrogeology & Water Quality in the Fresno Area, California* (Page & LeBlanc, 1969).

## Groundwater Levels

A groundwater-level monitoring program was developed when FID was formed in 1920. The program included monthly and quarterly measurement of wells within FID. As more farmers installed wells, FID began to use additional wells for measuring water levels. The water level measurement program has been maintained since 1920 and covers the vast majority of the Plan Area. FID began to store and organize water level data in a database in 1995, and has prepared annual Groundwater Reports for many years.

In the early 1970's the DWR completed a study of the aquifer underlying FID to determine the specific yields and available storage in the aquifer by township and range. FID has incorporated this information into its quarterly groundwater reports so that changes in storage are calculated.

## Groundwater Quality

Extensive groundwater-quality testing has been performed by various agencies in the Plan Area. Since the 1960's, testing for general chemical, trace mineral, and inorganic substances has been routinely performed on a large number of the community wells located in the Fresno/Clovis metropolitan area.

The available water quality data is voluminous and therefore is not presented in this Plan. The reader is referred to specific Plan participants if they seek water quality data.

In the *Water Resources Management Plan for Fresno-Clovis Urban and Northeast Fresno County* (1986) water quality was evaluated through research and assimilation of all available data, and the collection and analyses of water samples where additional data was needed. Documentary evidence of water quality held by the California Department of Health Services (DHS), Regional Water Quality Control Board (RWQCB), Department of Water Resources (DWR), Fresno County Health Departments Environmental Health System (EHS), and other agencies and municipalities were examined along with a historical review of pertinent literature. In addition, data developed from water quality hydrographs were grouped and evaluated in the report. Since 1986, a vast quantity of additional water quality data has been collected by the aforementioned agencies and the Plan participants.

## Land Subsidence and Groundwater Impacts on Surface Water Flow and Quality

The Plan participants have not historically monitored land subsidence and groundwater impacts on surface water flow and quality. Refer to sections 6.4 and 6.5 for more information on these topics, respectively.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 4 - REGIONAL GROUNDWATER MANAGEMENT OBJECTIVES

The Plan Area is, and will continue to be, dependent on groundwater as a significant water supply source. The Plan objectives have been developed to monitor, protect and sustain groundwater within the region. These objectives of the Fresno-Area Regional Groundwater Management Plan include:

1. Preserve and enhance the existing quality of the area's groundwater.
2. Correct the overdraft and stabilize groundwater levels at the highest practical beneficial levels.
3. Preserve untreated groundwater as the primary source of domestic water.
4. Maximize the available water supply, including conjunctive use of surface water and groundwater.
5. Conserve the water resource for long-term beneficial use and to assure an adequate supply for the future.
6. Manage groundwater resources to the extent necessary to ensure reasonable, beneficial, and continued use of the resource.
7. Monitor groundwater quality and quantity to provide the requisite information for establishing groundwater policies, goals, and recommended actions.
8. Improve coordination and consistency amongst agencies responsible for the monitoring and management of groundwater in the Plan Area.

The proposed actions identified within each of the sections of this Plan are intended to help accomplish these Plan objectives.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 5 - STAKEHOLDER INVOLVEMENT

### 5.1 - Advisory Committee of Stakeholders

The Technical Advisory Committee (TAC) was formed to guide the development and implementation of this Plan. The TAC includes landowners and representatives from each party participating in the plan. In October 2005, the TAC members include:

- Dale Stanton, Assistant General Manager, Fresno Irrigation District
- Bill Stretch, District Engineer, Fresno Irrigation District
- Lon Martin, Water Division Manager, City of Fresno
- Brock Buche, Water Division, City of Fresno
- Lisa Koehn, Assistant Public Utilities Director, City of Clovis
- Alan Weaver, Public Works Director, County of Fresno
- Phil Desatoff, Geologist, County of Fresno
- Jerry Lakeman, Fresno Metropolitan Flood Control District
- Alan Jacobsen, Public Works Director, City of Kerman
- Tim Bakman, Bakman Water Company
- Russ Holcomb, General Manager, Malaga County Water District
- John Garcia, General Manager, Pinedale County Water District
- Richard Carstens, Landowner in Fresno Irrigation District
- Chris Palmer, Landowner in Fresno Irrigation District

The TAC ensures representation from a broad spectrum of interests including public agencies, private utilities, local landowners, agricultural water purveyors, urban water purveyors, and special districts.

#### Planned Activities

A TAC will meet semi-annually or more frequently if deemed appropriate. The Committee will have the following responsibilities:

- Review trends in groundwater levels and groundwater quality;
- Evaluate the effectiveness of current groundwater management policies and facilities;
- Discuss the need for new groundwater management policies and procedures;
- Discuss the need for new groundwater supply/enhancement facilities;
- Evaluate the progress of on-going groundwater related projects;
- Assess the overall progress in implementing the programs outlined in the Groundwater Management Plan;
- Recommend updates or amendments to the Groundwater Management Plan;
- Identify regional and multi-party groundwater projects;
- Identify and share information on funding opportunities for groundwater projects;
- Share new ideas and methods for managing groundwater;

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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- Update Plan participants on the efforts of other regional groups; and
- Review and comment on the Annual Groundwater Report.

## 5.2 - Relationships with Other Agencies

The participants have been and continue to be involved in many programs, studies and committees that include groundwater related items in this Plan as part of their focus or charge. The Participants will continue to be involved in these efforts. A summary of some of these efforts is included here.

### 1986 Water Resources Management Plan

As described in the 1986 Water Resources Management Plan (1986 Plan), the Fresno Irrigation District (FID), City of Fresno (Fresno), the City of Clovis (Clovis), the County of Fresno (County), and the Fresno Metropolitan Flood Control District (FMFCD) have partnered in a cooperative effort to develop and implement a comprehensive surface and groundwater management program consistent with the Water Resources Management Plan for Fresno-Clovis Urban and Northeast Fresno County. The 1986 Plan, prepared with a grant from the Environmental Protection Agency (EPA) under Section 205j of the Clean Water Act, is a water quality and quantity project to plan for the preservation and enhancement of the area water supply.

### Fresno/Clovis Area Recharge Program

The five agencies have entered into a Master Agreement for management of water quality and quantity for the area. The main thrust of the program involves using the FID's delivery system to deliver portions of the Fresno and Clovis water allocations to certain FMFCD basins for recharge during the summer when the basins are not needed to control urban storm runoff. Fresno and Clovis both own and operate significant recharge facilities to which a portion of the cities' water allocations is also delivered using the FID's system. This program also contains elements designed to protect the quality of groundwater in the area.

### Integrated Storage Investigation Program

Other basin wide groundwater management efforts include a Memorandum of Understanding (MOU) with the Department of Water Resources entered into on May 24, 2001, as part of the Integrated Storage Investigation (ISI) program. The MOU between DWR, the Kings River Conservation District, Alta Irrigation District, Consolidated Irrigation District and Fresno Irrigation District, formed a cooperative effort amongst the agencies to review and investigate groundwater conjunctive use efforts on the Upper Kings Basin. During the formation of this program, the Kings Basin Advisory Panel was formed to include the basin stakeholders. The primary goal of the Basin Advisory Panel is "to stabilize groundwater in the Upper Kings Basin by halting, and ultimately reversing, the current overdraft of the groundwater aquifer."

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## Upper Kings Water Forum

Several of the participants to this Plan are actively involved with the Upper Kings Water Forum. Specifically, the City of Fresno, City of Clovis, County of Fresno, and FID have been involved. Representatives from FID serve on the Upper Kings Forum Planning and Steering Committee. The purpose of the forum has been to develop an Integrated Regional Water Management Plan with assistance from State funding. The forum has also sought funding for construction, or implementation, projects within the region, including projects for the City of Clovis and FID. This Fresno-Area Regional Groundwater Management Plan will be incorporated into the Upper Kings Forum Integrated Regional Water Management Plan.

## Water and Groundwater Associations

All of the plan participants are active in the groundwater community. Table 5-1 is a matrix illustrating the many water and groundwater related organizations that each participant belongs to. Many participants hold memberships in similar organizations, which increase opportunities for groundwater management coordination and the sharing of ideas.

## **Planned Activities**

- Continue involvement with existing regional programs including the Fresno/Clovis Area Recharge Program, Integrated Storage Investigation Program, and Upper Kings Water Forum.
- Participate in newly formed regional groups that would complement this Plan.

## **5.3 - Plan to Involve the Public and Non-Participating Agencies**

Water purveyors that are within the Plan boundary, but are not participating, include:

- Biola Community Service District
- Easton Community Service District
- International Water District

Each of these member agencies was invited to be a participating agency to the Plan, but could not financially participate. A copy of the draft Plan was sent directly to these agencies for review and comment. The Plan participants would welcome the participation of these and other agencies in the Plan Area, and they will have the opportunity to join the Plan in the future.

Input from neighboring agencies and interested parties was also solicited during this Plan's preparation.

## **Existing Activities**

- Conducted public workshops regarding the Plan prior to adoption.
- Solicited input from neighboring agencies including Biola Community Service District, Easton Community Service District and International Water District.

## FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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### **Planned Activities**

- Allow for agencies within the Plan Area to be incorporated into the Plan.
- Publish annual groundwater reports for distribution to stakeholders and interested parties. Notify the public of the availability of the annual report for their review on websites and newsletters.
- Publish information on the accomplishment of the regional group on websites and newsletters.

TABLE 5-1

FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN  
MEMBERSHIPS IN WATER-RELATED ORGANIZATIONS

Organization	Fresno Irrigation District	County of Fresno	City of Fresno	City of Clovis	City of Kerman	Malaga County Water District	Pinedale County Water District	Fresno Metro. Flood Control District	Bakman Water Company
Agricultural Water Management Council	●								
American Public Works Association		●	●	●	●			●	
American Water Works Association			●	●	●				
Association of California Water Agencies	●		●			●	●	●	
Association of Metropolitan Water Agencies	●	●	●	●		●	●	●	●
California Rural Water Association					●				
California Storm Water Quality Association								●	
California Urban Water Conservation Council			●			●			
California Water Awareness Campaign			●	●	●			●	●
Central Valley Project Association			●						
Central Valley Water Awareness Committee	●	●	●	●		●		●	●
Central Valley Water Education Center	●	●	●	●					
Fresno-Area Groundwater Management Group	●	●	●	●	●	●	●	●	●
Fresno County Water Advisory Committee				●					●
Fresno/Clovis Area Recharge Program	●		●	●				●	
Kings River Water Association	●								
National Association of Flood and Stormwater Management Agencies								●	
Waldron Pond Group	●			●					
Water Education Foundation			●	●				●	●

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 6 - MONITORING PROGRAM

A groundwater level and quality monitoring program is a critical component for documenting and evaluating groundwater conditions within the Plan Area. There is a need for a coordinated and consistent level and quality data collection method within the Plan Area as there is not currently a complete groundwater data management system for the Plan Area. The County of Fresno has planned to develop a database management system, but insufficient funding has delayed its development. The cooperative effort through this Plan will help spread some of the financial burden to multiple agencies. The program shall include groundwater level, quality monitoring, as well as any indication of land subsidence. To ensure the integrity and consistency of the data, protocols for collecting and reporting the data are needed, and must be implemented by each agency. The proposed monitoring program is intended to:

1. Provide warning of potential future problems.
2. Use data gathered to generate information for water resources evaluation.
3. Develop meaningful long-term trends in groundwater characteristics.
4. Provide data comparable from place to place in the plan area.
5. Better characterize the quality of well water in the plan area.

### 6.1 - Groundwater Level Monitoring

Many of the participants routinely perform groundwater level and quality monitoring in accordance with agency standards and State regulations for water purveyors, however the frequency and method for monitoring varies by participant. FID currently collects well water level readings within most of the Plan Area, but the system only includes a few wells in some areas and has very little water quality information. FID developed a groundwater-monitoring program, when it was formed in 1920, to quantify changes in groundwater depth within the District. FID currently collects water level measurements each quarter, and also compiles water level data that is collected yearly from other agencies. Each agency's water-level measuring-program was established separately and the data are managed separately, but FID compiles all the data into a single database. Other agencies from which FID receives groundwater level data include:

- City of Fresno
- City of Clovis
- Consolidated Irrigation District
- Madera Irrigation District
- James Irrigation District
- Malaga County Water District
- California Department of Water Resources

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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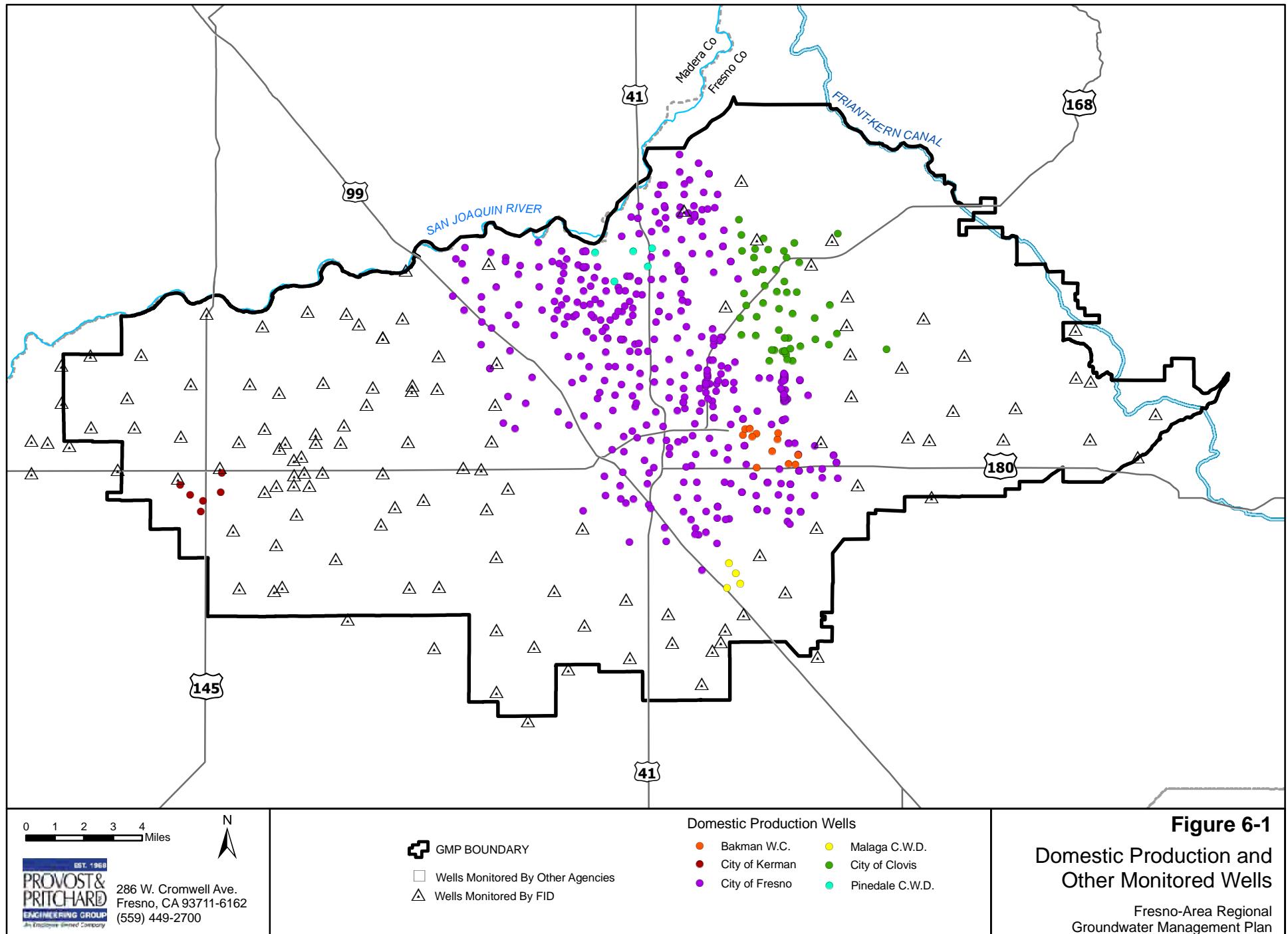
The County of Fresno no longer collects groundwater level data outside of its CSAs or WWDs. Some of the water purveyors, such as Kerman and the City of Fresno, have a water level measurement device in many wells connected to their SCADA systems. Other water purveyors such as Pinedale County Water District do not routinely record groundwater levels. FID and the City of Clovis monitor wells near their recharge facilities. The City of Fresno has several triple completion monitor wells near existing well sites that are monitored, however there are no monitor wells in or around recharge basin facilities that are used to evaluate groundwater recharge effects. A map of the domestic production and monitor wells that are frequently monitored for water level is included as Figure 6-1.

## **Existing Activities**

- Individual monitoring by some participants with limited data sharing.
- Encourage landowners and developers to convert unused wells to monitor wells.

## **Planned Actions**

- Develop a groundwater level monitoring program for the entire Plan Area. This will be accomplished by performing an inventory of monitoring efforts, finding gaps in the data, and adding wells to monitor in gap areas. Well driller's reports or monitored wells will be compared to identify each well's perforation depth.
- Decide on months for water level measurements to be taken so they are consistent for all parties.
- Survey the elevations for all wellheads and use a common survey datum.
- Protect wells in monitoring program from being abandoned.
- Develop Groundwater Database in accordance with 1986 Water Resources Master Plan and Fresno County Ordinance.
- Develop and use standard forms by all participants.
- Develop program for sharing data.



# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 6.2 - Groundwater Quality Monitoring

Groundwater within the Plan Area is generally of good quality, however there are some specific areas of concern. Primary contaminants within these areas of concern are nitrates, Dibromo-Chloropropane (DBCP), and TCE. The domestic water purveyors within the Plan Area perform routine water quality monitoring as required by the State Department of Health Services. The requirements for testing are based on the size of the community system. Additional testing is performed at individual sites for specific constituents of concern. Additional water quality testing is needed to update various plumes that have been identified within the area. In addition, there are many locations within the Plan Area where little to no water quality monitoring is performed. Outside of the boundaries of the domestic water purveyors, the County of Fresno will perform basic water quality monitoring for individual wells, however, the City of Fresno recently completed a study of nitrate in wells in the southeast portion of the Plan Area. The City of Fresno has also recently studied nitrate in wells near the Wastewater Treatment Facility.

The following contaminant plumes are found within the City of Fresno's borders:

- Purity Oil plume
- Fresno landfill
- TCE Pinedale groundwater site
- FMC plume
- Salt Plume
- THAN plume
- Old Hammer Field plume
- Weir Floway plume

Most of the groundwater contaminants in the Fresno area are being addressed by responsible parties through assessment and remediation, and some are in advanced stages of mitigation. The responsible parties of many of the point source contaminants (i.e. hydrocarbons and VOCs) are working with state (Regional Water quality Control Board, Department of Toxic Substances Control) and local (FCEHD) agencies to remediate the contaminants. Area wide contaminants are being addressed via wellhead treatment (DBCP) and plans are underway to address others, such as nitrate.

The groundwater quality beneath portions of the City of Fresno is compromised by a number of inorganic and organic chemical contaminants. The inorganic contaminants include chloride, nitrate, arsenic, manganese and chromium. Organic contaminants include petroleum hydrocarbons and MTBE, volatile organic compounds (VOCs), DBCP and other pesticides, and trichloropropane (TCP). The sources of these contaminants are primarily anthropogenic and include industrial facilities, fuel storage and dispensing sites, agricultural applications, septic systems, and food processing facilities.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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Management of these plumes is a key issue that the City of Fresno has historically focused on and will continue to address.

The Fresno Irrigation District does not have specific water quality requirements since they only supply agricultural water. However, they are cognizant of recommended water requirements for crops and use these as guidelines when evaluating water quality.

## **Existing Activities**

- Routine water quality monitoring and reporting by domestic water purveyors as required by DHS.
- County offers free water quality testing to individual landowners outside of a community system. This data is either not retained or not readily available.
- Monitor sediment in recharge/flood control basins according to FMFCD's Standard Operating Procedures for Monitoring, Maintaining and Disposal of Stormwater Basin Sediment.

## **Planned Actions**

- Develop a coordinated monitoring program by methods similar to groundwater level monitoring evaluation; inventory existing efforts, find gaps in data monitoring, then add wells to monitor in gap areas. Critical to this effort will be an understanding of perforation intervals within each well to identify the depth of the various constituents of concern.
- Protect wells in monitoring program from being abandoned.
- Develop program for sharing data to participants.
- Improve access to County individual water quality testing information.
- Prepare groundwater quality maps on a periodic basis with the aid of a qualified hydrogeologist.

## **6.3 - Monitoring Protocols**

Monitoring protocols are necessary to ensure consistency in monitoring efforts and consistency is required for monitoring evaluations to be valid. Consistency should be reflected in factors such as location and reference elevation at sample points, sampling procedures, testing procedures, time of year and frequency of sample collection. Without such common ground, comparisons between and among reports must be carefully considered. Consequently, more uniform data gathering procedures are proposed in order to increase the reliability of analyses. Specific protocols for water level and water quality monitoring are discussed below.

General protocols that will be used for the groundwater level-measuring program include:

- Perform all water level measurements in as short a period as possible.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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- Perform year-to-year measurements at the same time of the year.
- Document the measurement reference point for each well as well as the measuring device and calibration date for the measuring device.
- Document the date and time of each measurement.
- Test each well twice, or more if needed, until consistent results are obtained.
- If there is reason to suspect groundwater contamination, water level measuring equipment will be decontaminated, and in general, measurements will proceed from the least to the most contaminated wells. Also use standardized decontamination procedures.
- Landowners will be contacted for permission to access their property prior to any fieldwork.

The water-quality monitoring protocols may include the following for existing and future monitoring efforts:

- Adequate pumping time prior to sample collection with documentation of stabilized parameters.
- Proper sample containers, preservatives, and holding times.
- Secure chain-of-custody procedures.
- Testing will only be performed at accredited, state-certified laboratories that use proper quality control and quality assurance procedures.
- All samples will be given a quality assurance code, which represents the relative confidence in the water sample.
- Some testing will include spiked, duplicate and field-blank samples for comparison to genuine samples.
- Proper handling procedures (e.g. placing the containers in an ice chest immediately after collection).
- Documentation of all protocols and procedures that are used.
- Uniform time of year for sampling (during periods of both minimal pumping in the winter and heavy pumping in July and August).
- Document the name, contact information, and qualifications of the individuals taking measurements.
- Landowners will be contacted for permission to access their property prior to any fieldwork.

These protocols, and any new protocols that are adopted, will be documented in future Annual Groundwater Reports.

## Existing Activities

- Annual calibration of water level measurement transmitters by some agencies
- Use of well sounder for measurement.
- Conduct water quality testing in accordance with DHS and EPA requirements and testing procedures.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## **Planned Actions**

- Collect and compare monitoring protocols from all of the Plan participants.
- Develop standard regional protocols for water level and water quality monitoring.
- Develop standardized form for collection of data.

## **6.4 - Land Surface Subsidence Monitoring**

No information is available on historic land subsidence in the area. The area may have experienced land subsidence in the early 1900's when it was prevalent in the San Joaquin valley. However, no significant land subsidence is known to have occurred in the last 50 years as a result of land development, water resources development, groundwater pumping, or oil drilling. Lands within the Plan Area will be observed for land subsidence, and, if land subsidence becomes a problem, this Plan will be amended to include preventive and mitigative measures for land subsidence. A Global Position System (GPS) control network has been established throughout the Plan Area. This control network consists of more than twenty control points that are tied to the High Precision Grid Network (HPGN), and the vertical datum is North American Vertical Datum 1988 (NAVD 88). This control network can be utilized to survey existing local benchmarks to monitor subsidence.

## **Existing Activities**

- Established GPS Control Network throughout the Plan Area.

## **Planned Actions**

- Periodic resurvey of control points and local benchmarks for land subsidence.

## **6.5 - Surface Water Monitoring**

Within the Plan Area, large areas of agriculture lands that formerly were irrigated with surface water have been urbanized. Much of these urbanized lands rely solely on groundwater for water supply. Surface water is delivered to the outlying agricultural area, stormwater and recharge basins, and some landscaped areas. While a portion of the historically delivered surface water is routed to recharge basins, it was not until 2004, that the cities of Fresno and Clovis were able to utilize surface water through newly constructed surface water treatment facilities. The location of surface water deliveries within the Plan Area has had an impact on groundwater levels as shown in Figure 3-2. FID maintains daily surface water delivery records, and compares surface water delivered within its boundary to groundwater level changes.

Surface water flows can impact groundwater levels and groundwater quality if the two water sources are hydrologically connected. In addition, pumping may also affect nearby surface water rights if the surface supplies are hydrologically connected to the groundwater. Much of the east-side stream flow water enters into the FID canal system

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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for delivery to FMFCD and FID basins. FMFCD monitors surface water flows in portions of its boundary.

Changes to surface water quality can also affect groundwater quality by changing the quality of water that seeps from a stream. FID has not performed any water quality monitoring of stream flows entering FID. The water quality of the streams is monitored by other agencies and has historically been found to be of good quality. Between 85% and 90% of the water recharged in the FID is imported water. When importing water for recharge, the FID considers not just the cost but also the quality of the water to be recharged. The Participants will likewise be cognizant of water quality issues on streams in the Plan Area and address water quality issues if they arise.

## **Existing Activities**

- FID reports surface water delivered within Plan Area and compares to groundwater level changes in annual report.
- Monitoring of surface water quality at Fresno and Clovis Surface Water Treatment Plants, as well as along conveyance system to Plants.
- Monitor quality of reclaimed water pumped to FID Canals from wells at the Wastewater Plant.

## **Planned Actions**

- Continue monitoring of surface water deliveries within Plan Area.
- Prepare updated water budget for the City of Fresno and Clovis.
- Prepare water budget for the Plan Area based on annual monitoring program.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 7 - GROUNDWATER RESOURCES PROTECTION

### 7.1 - Well Destruction

Proper destruction of abandoned wells is necessary to protect groundwater resources and public safety. Improperly destroyed wells can provide a conduit for surface or near-surface contaminants to reach the groundwater. In addition, undesired mixing of water with different chemical qualities from different strata can occur in improperly destroyed wells.

The administration of a well construction, abandonment and destruction program has been delegated to the Counties by the State legislature. Accordingly, Fresno County has adopted a permitting program consistent with DWR Bulletin 74-81 for well abandonment and destruction. The City of Fresno also has a permit program for well destruction.

The Participants have and will continue to properly destroy any of their wells that are no longer utilized, and will enforce proper well destruction procedures for all private wells. In addition, the Participants will encourage landowners and developers to convert unusable wells to monitor wells, rather than destroy them, so that they can become a part of the Participants' groundwater monitoring program.

#### **Existing Activities**

- The Plan participants destroy wells according to City of Fresno, Fresno County or State of California standards.
- Clovis and Fresno require no longer used residential wells within the City to be properly destroyed.

#### **Planned Actions**

- Improve enforcement and consistency of well destruction policies; currently wells are not usually destroyed until the land is sold or the land use changes.
- Identify and map the locations of wells requiring proper destruction in the Plan Area.
- Maintain records on all well destruction performed in the Plan Area.

### 7.2 - Well Construction Policies

Proper well construction is important to ensure reliability, longevity, and protection of groundwater resources from contamination. Fresno County has adopted a well construction permitting program consistent with Department of Water Resources Bulletin 74-81 to assure proper construction of groundwater wells within the County. Other Plan participants have adopted similar permitting programs and standards.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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Proper wellhead protection is essential to ensure that contaminants do not inadvertently enter a well. Well construction policies that are intended to ensure proper wellhead protection are discussed in Section 7.3 – Wellhead Protection.

Some participants construct monitor wells to monitor water levels and water quality. Proper construction of monitor wells is essential to ensure their reliability and longevity. Important items to consider for a properly drilled monitor well include (1) method of drilling, (2) casing type and diameter, (3) perforations or well screen, (4) gravel pack, (5) annular seal, and (6) well development. As a general rule, monitor wells should be placed immediately upgradient and downgradient of a waste discharge site. After the monitor well is developed an aquifer test is recommended. Care should be taken to drill monitor wells deep enough so they won't go dry during summer months or drought periods; however, they should not be drilled so deep as to make monitoring of the shallowest strata difficult. Historical water level fluctuations should be examined to determine the magnitude of fluctuations to be expected in the future.

## **Existing Activities**

- Wells are constructed according to State of California standards and may be further modified to meet site-specific requirements to accommodate a unique geologic setting in the local area.
- Records are maintained for all new wells drilled in the Plan Area.

## **Planned Actions**

- Share well construction results in a 'Lessons Learned' format from water wells constructed in the Plan Area to share experiences among the Plan participants, and prevent common and recurring mistakes.

## **7.3 - Wellhead Protection**

### Need for Wellhead Protection

Contaminants from the surface can enter an improperly designed or constructed well along the outside edge of the well casing or directly through openings in the wellhead. A well is also the direct supply source to the customer, and such contaminants entering the well could then be pumped out and discharged directly into the distribution system. Therefore, essential to any wellhead protection program are proper well design, construction, and site grading to prevent intrusion of contaminants into the well from surface sources.

Since wells can be a direct conduit to the aquifer, they must be properly destroyed and abandoned or they will provide an unimpaired route for pollutants to enter the groundwater, particularly if pumping equipment is removed from the well and the casing is left uncapped. Well abandonment is discussed in Section 7.1.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## Wellhead Protection Guidelines

Wells constructed by the Participants will be designed and constructed in accordance with DWR Bulletin 74-81. In addition, the Participants will encourage landowners to follow the same standard for privately owned wells. DWR Bulletin 74-81 provides specifications pertaining to wellhead protection, including:

- Methods for sealing the well from intrusion of surface contaminants.
- Covering or protecting the boring at the end of each day from potential pollution sources or vandalism.
- Site grading to assure drainage is away from the wellhead.
- Setback requirements from known pollution sources.

## Wellhead Protection Area

As defined in the Federal Safe Drinking Water Act Amendments of 1986, a wellhead protection area is "the surface and subsurface area surrounding a water well or well field supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field." Wells are randomly spaced throughout the whole Plan Area. Therefore, the entire Plan Area is treated as a wellhead protection area.

## **Existing Activities**

- Wellhead protection is performed according to DWR guidelines.

## **Planned Actions**

- Identify and properly modify all public wells lacking adequate wellhead protection.

## **7.4 - Saline Water Intrusion**

Saline water intrusion is not currently an identified problem in the Plan Area. The Plan Area is not located within or near large saline water bodies such as the ocean, saline inland lakes, or the saline deep aquifer on the Westside of the San Joaquin Valley. In addition, the Participants strive to prevent the importation of saline surface waters that could ultimately degrade the groundwater. When alternative water sources are available for importation, the Participants consider not only the cost but also the quality, including salinity, of the water. The Participants will monitor water quality in a manner that provides management information about salinity in the area. Should saline intrusion become a problem in the future, a Plan amendment will be prepared.

## **Existing Activities**

- None

## **Planned Actions**

- See Groundwater Quality Monitoring Program.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 7.5 - Migration of Contaminated Groundwater

Groundwater contamination can be human induced or caused by naturally occurring processes and chemicals. Sources of groundwater contamination can include irrigation, dairies, pesticide applications, septic tanks, industrial sources, stormwater runoff, and disposal sites. Groundwater within the Plan Area is generally of excellent quality for agricultural use. However, serious water quality problems in the southern and eastern portions of the Plan Area occur due to high concentrations of nitrate and DBCP. The presence of DBCP is primarily due to former pesticide application to the surrounding farmland.

The City of Fresno Nitrate Management Plan project, nearing completion, has yielded 20 to 30 viable projects of various types including blending, intentional recharge, removal of nitrate sources, treatment for nitrate reduction, and exchange of high nitrate water with lower nitrate surface water that can be used for recharge. All of these projects will be compared, ranked for effectiveness, and placed into service as appropriate over the next several years.

Information on existing contaminant plumes is voluminous, particularly for those plumes that have been assessed and are in various stages of remediation. Therefore, information on the plumes is not provided here.

### Existing Activities

- Regularly review data and reports from regulatory agencies on contaminant plumes to provide warning of potential future problems.
- Report groundwater contamination to the appropriate regulatory agencies, including the Regional Water Quality Control Board and Department of Toxic Substances Control.

### Planned Actions

- Seek to locate recharge basins next to areas with water quality problems to blend water supplies and create a hydraulic barrier to impede movement of contaminant plumes.
- Update maps for all contaminant plumes in the Plan Area.
- Implement some of the viable projects identified in the City of Fresno Nitrate Management Plan to control and reduce nitrate levels in the groundwater.

## 7.6 - Groundwater Quality Protection

The Fresno groundwater basin has been designated as a Sole Source Aquifer as authorized by Section 14246 of the Federal Safe Drinking Water Act of 1974. The designation, made by EPA in 1978, means the Fresno metropolitan area is dependent on a single source of groundwater and that source must be protected from potential contamination. This designation emphasizes the importance of protecting groundwater

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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quality in the Plan Area. Groundwater comprises the majority of water used in the Plan Area; consequently pollution prevention is a cardinal component of this GMP. Groundwater quality can be protected through stormwater quality management, septic system management, and water vulnerability planning and management, as discussed below.

## Stormwater Quality Management Program

The Fresno Nationwide Urban Runoff Program project was conducted between 1981 and 1983 in conjunction with the US EPA's national effort. The results indicated that runoff contains significant levels of many contaminants, including most of the heavy metals and some organic compounds. Most stormwater in the Plan Area is delivered to flood control/recharge basins where it can percolate to the groundwater or accumulate in the vadose zone. Hence, stormwater quality management is essential to protecting the quality of the local groundwater.

In compliance with the federal Clean Water Act and storm water permit regulations, the FMFCD, County of Fresno, City of Fresno, City of Clovis, and California State University at Fresno, developed a Stormwater Quality Management Program. The program is documented in the *Fresno-Clovis Storm Water Quality Management Plan*, prepared in February 1999. As owner and operator of the storm water drainage system serving the metropolitan area, the FMFCD has primary responsibility for implementing this mandated program. The program includes pollution prevention and control practices for drainage system planning, design, construction, and maintenance. The program also includes public education programs; commercial, industrial and new development storm water quality control practices; monitoring to assess storm water impacts; and ordinances to enforce storm water quality controls.

## Septic Systems

Septic systems have been identified as a major contributor to high nitrate levels in the local groundwater. Septic systems are still present in rural areas and some urban neighborhoods within the Plan Area. The Plan participants generally do not permit septic systems to be installed in urban areas, and specific rules and regulations must be followed for septic systems installed in rural areas. The gradual decommissioning of septic systems in urban areas is a principal goal for the Plan participants.

## Water Vulnerability

The local aquifer can be contaminated through intentional acts such as vandalism and terrorism. As a result, the Plan participants have adopted numerous strategies to prevent intentional contamination such as security cameras, fencing, and frequent water quality testing for contaminants.

Some plan participants have also prepared Vulnerability Assessments and Emergency Response Plans in compliance with the 2002 Bioterrorism Act. The Bioterrorism Act requires communities serving water to more than 3,300 persons to:

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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1. Conduct a Vulnerability Assessment.
2. Certify and submit a copy of the Vulnerability Assessment to the EPA Administrator.
3. Prepare or revise an Emergency Response Plan based on the results of the vulnerability assessment.
4. Certify to the EPA Administrator, within 6 months of completing the assessment, that an Emergency Response Plan has been completed or updated.

## **Existing Activities**

- A Stormwater Quality Protection Program is being implemented by FMFCD, Fresno, Clovis and the County of Fresno to reduce the volume of stormwater pollutants that reach the groundwater.
- Runoff-borne pollutants are trapped in flood control/recharge basin sediments for subsequent removal. All new basins are constructed in accord with FMFCD design standards that facilitate pollutant entrapment and management.
- Plan participants that are required to have prepared Vulnerability Assessments and Emergency Response Plans will keep these documents updated.
- The County of Fresno enforces rules and regulations for newly installed septic systems to reduce the incidence of nitrate contamination in the groundwater.

## **Planned Actions**

- Plan participants will seek funding to sewer areas still served with septic tanks, when practical.
- Plan participants will seek funds to improve security at their water facilities and reduce the potential for contamination from acts of vandalism or terrorism.
- Plan participants will make use of available tools, such as View Fresno, the City of Fresno's online facility and geographic program, to strictly enforce rules and regulations regarding permits for new septic systems in locations where there is an existing sewer collection system in close proximity.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 8 - GROUNDWATER SUSTAINABILITY

The region is dependant on sustaining the long-term available groundwater in the Plan Area, as it is critical to the livelihood and economy of the area. The actions described within this section are intended to maintain or increase the volume of groundwater that is stored within the Plan Area. Water conservation, groundwater recharge, surface water treatment for domestic delivery, and water recycling are some of the efforts that are used within the area to mitigate the groundwater overdraft and replenish the groundwater supply.

Historic groundwater pumping within the urban area has developed a large cone of depression within the Plan Area. At the present time, groundwater replenishment efforts within the Plan Area do not offset the combined effect of groundwater extractions and subsurface outflow. The result is that the groundwater overdraft within just the FID boundary has been estimated to be approximately 20,000 acre-feet annually (FID GMP Supporting Documents, 1995). The overdraft within the Plan Area is believed to be even greater. This overdraft is evidenced by falling groundwater levels, and manifested by increasing costs of groundwater pumping, some groundwater degradation, and the undesirable migration of contaminant plumes. It is the specific goal of the Plan to correct the overdraft and to stabilize groundwater levels at the highest practical beneficial levels.

The Plan participants view groundwater usage tolls as a last resort for reducing groundwater pumping and reducing overdraft. The participants strive to ensure the unrestricted, non-export related, private use of groundwater within the Plan Area. The Plan participants believe that proper management, conservation and education programs will help to stabilize groundwater levels and preclude the need for groundwater usage fees.

### 8.1 - Groundwater Recharge

Substantial portions of the groundwater basin underlying the Plan Area are subject to conditions of critical overdraft as designated by the California DWR in Bulletin 118-80. Drinking water supplies and much of the agricultural water supply in the Plan Area are currently dependent on groundwater and, as a result, the groundwater resource has been stressed. Groundwater is a renewable resource through its proper management. Groundwater recharge is a viable method of renewing groundwater consumed. Recharge of surface water through the soils to the groundwater reservoir is also an economical alternative to replacing the existing groundwater supply system with a surface water supply system requiring treatment, storage, and delivery facilities.

Stabilization and recovery of the aquifer are the goals of groundwater replenishment and will result in (1) decreasing the pumping lifts and thereby decreasing the energy

## FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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needed for pumping; (2) preventing expenditures for deepening wells; and (3) preventing the premature abandonment of wells which would be necessitated by the lowering of the water table.

Groundwater recharge efforts within the Plan Area primarily involve using FID's delivery system to deliver portions of the Fresno and Clovis water allocations to specific FMFCD basins for recharge during the summer when the basins are not needed to control urban storm runoff. FMFCD owns and operates these basins. Not all basins are used for groundwater recharge, as some have been, or will be, converted to recreational facilities such as parks or athletic fields. Within the City of Fresno, the City Water Division and Parks and Recreation Division have developed a recommended designation for the proposed use of each basin during the non-storm season. FMFCD refers to this designation as each basin's secondary use designation. The designations include recharge, recreation, or dual use. The dual use designation is used for basins that have been developed for recreation, but also have a significant area of the basin remaining for recharge. The City's recommendation was considered and approved by FMFCD's Board of Directors. As new storm water basin locations are identified by FMFCD, the City makes a recommended designation for that basin, and it is then presented to FMFCD's Board of Directors for final determination. Recharge capability is an important consideration when making these designations.

To maintain needed groundwater recharge at these basin sites, it is important to preserve the recharge capability provided by the basin sites designated for recharge.

Although some basins are designated as recreation or dual use facilities, they are not developed as a recreational facility for many years because of a lack of funding or the basins not being fully excavated. This interim period can last several years. In some situations, these basins have been utilized for recharge during the interim period before it is converted to a recreational facility. Once a basin is fully developed as a recreational facility, it is no longer utilized for recharge.

Fresno and Clovis both own and operate significant recharge facilities, to which a portion of the cities' water allocations is also delivered using FID's system.

Some areas in the United States, including Arizona and some parts of California, are performing aquifer storage and recovery through wells. In these programs, surface water (often treated) is directly injected to the groundwater aquifer through existing wells during available periods when the well is not needed for extraction, then the recharged water is later extracted from that same well. Although this type of groundwater storage and recovery is not known to be occurring within the Plan Area, there may be application for such a program within certain portions of the Plan Area.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## Existing Activities

- Increase groundwater recharge capabilities within the Plan Area.
- Periodically remove sediment and rip the soils in recharge basins to maintain recharge rates.
- Maintain irrigation canals in an unlined or open bottom condition in those locations where it is determined that canal seepage is a significant source of recharge and does not create detrimental side effects.
- Work cooperatively to minimize development on lands that are favorable for artificial recharge.
- Without compromising flood protection, maximize retention and detention periods for stormwater runoff to maximize percolation to groundwater.
- Measure the volume of water delivered to groundwater recharge basins.
- Use FMFCD basins that are designated for recreational use as recharge basins prior to its conversion to a recreational facility.

## Planned Activities

- Investigate the feasibility of groundwater recharge using flood control basins in the vicinity of Bakman Water Company.
- Seek funding to investigate the feasibility of groundwater recharge facilities in western Clovis.
- Construct additional interties between conveyance facilities and flood control basins to facilitate groundwater recharge.
- Develop and maintain an inventory of sites in the region that are suitable for recharge.
- Install flowmeters on all unmetered turnouts to recharge basins in FID.
- Prepare a water budget for the Plan Area to estimate total groundwater pumping, intentional recharge, deep percolation, groundwater inflow and outflow, change in groundwater storage, and, ultimately, the safe yield of the local aquifer.
- Investigate feasibility of aquifer storage and recovery within the Plan Area.
- Investigate feasibility of increasing use of surface water for landscape areas.
- Consider recharge capability of FMFCD basins when considering the secondary use designation for that basin.
- Seek to minimize reduction of groundwater recharge capabilities caused by the conversion of basins already designated for recharge purposes to recreational uses by increasing awareness or impacts of lost recharge capability, promoting alternative considerations, and pursuing replacement recharge capability when necessary.

## 8.2 - Water Conservation and Education

The Plan participants will at all times encourage effective water conservation measures, including residential and on-farm water saving technologies which produce a true savings of water. Plan participants intend to investigate possible incentive programs

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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that might be made available to landowners and water users to enhance the efficient use of water within the Plan Area. The participants have always been, and will continue to be, committed to efficiently managing water supplies so as to maximize the beneficial use of surface water while enhancing and preserving the groundwater resources to meet the balance of the water needs of the landowners and water users within the Plan Area. The participants will also participate in cooperative conservation efforts with other agencies and private parties.

## Existing Activities

The Plan participants practice a variety of measures to educate the public and encourage water conservation. Some of these measures include:

- Watering restrictions on certain days and certain times of the day.
- Educational and informational programs through mailings, newsletters, websites, radio and television commercials, newspaper advertisements and pamphlets.
- Designated water conservation coordinator to enforce conservation measures, assess fines for water wasting, and perform water audits.
- Rebates for low water use fixtures.
- Require new developments to include water conservation fixtures and technology.
- Involvement in organizations that promote water education and water conservation such as the California Water Awareness Campaign, California Water Education Center, and the Water Education Foundation.
- Require new developments to use water conserving technologies, methods, and practices.
- Some participants use water meters and tiered water pricing to encourage conservation through cost savings to the consumer.
- In compliance with AB 2572, the City of Fresno has developed a water meter installation program and schedule. Meter installations will begin about 2008 and are planned for completion in 2013.

## Planned Activities

- Share information among the Plan participants on methods that have been successful in conserving water.
- Secure funds to perform metering studies and install water meters at unmetered residential, commercial, and industrial connections.
- Bakman to implement plan to install meters on new development and existing services by 2025.

## 8.3 - Groundwater Use Limitations

The California Water Code gives certain participants the power to limit or suspend groundwater extractions. However, such limits will only be implemented if the

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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participants determine through study and investigation that groundwater replenishment programs or other alternative sources of water supply have proved insufficient or infeasible to lessen groundwater demand. In the unlikely event that it becomes necessary to reduce groundwater extractions, the participants intend to accomplish such reductions under a voluntary program, which will include suitable incentives to compensate users for reducing their groundwater pumping. The participants will not attempt to restrict or otherwise interfere with any landowner or water user exercising a valid right to pump and utilize groundwater.

County of Fresno Ordinance No. 00-013 regulates groundwater extractions and requires permits for transferring groundwater outside of the County. The Participants generally do not support groundwater pumping for export out of the Plan Area unless it involves a transfer or exchange of water that will not negatively impact the water supply available to the Plan Area.

## Pumping Well Interference from Adjacent Properties

One cause of overdraft within the Plan Area is pumping by adjacent landowners, primarily to the south and west of the Plan Area. This occurs when water users in an area pump groundwater and the extraction well's capture zone entrains groundwater from a neighboring entity.

Most of the pumping by adjacent landowners is not offset by groundwater replenishment, which results in the lowering of groundwater levels. That, in turn, causes a subsurface outflow of groundwater from the Plan Area. Previous estimates place the combined subsurface outflow to the south and west as much as 80,000 acre-feet annually.

The Participants intend to encourage efforts to secure supplemental surface water supplies for these areas outside of the Plan Area that have insufficient surface water supplies. The Participants have and will continue to consider entering into cooperative agreements with water users and/or appropriate agencies located outside the Plan Area's boundaries but within or adjacent to the Kings sub-basin. Such cooperative agreements may implement voluntary programs and/or may provide for other actions acceptable to the participants and the affected water users/agencies. However, in no event will the participants attempt to unilaterally impose limits on the lawful extraction and use of groundwater outside its boundaries, and nothing in this section is intended to confer powers on the participants to act within the boundaries of another agency in contravention of the Water Code.

## **Existing Activities**

- Some agencies do not permit individual wells to be drilled in their service area, and all new development must be connected to the agency's water system.
- Restrictions on groundwater exporting.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## Planned Activities

- Encourage efforts to secure supplemental surface water supplies for these areas outside of the Plan Area that have insufficient surface water supplies.

## 8.4 - Conjunctive Use of Water Resources

Conjunctive use of water is defined as the coordinated use of both underground and surface water sources so that the combination will result in optimum benefits. The members believe that they will continue to be water short for the foreseeable future. Conjunctive use is one method to provide more water to users while conserving groundwater resources.

The Cities of Fresno and Clovis have constructed water treatment plants for treating their surface water entitlements. This will ultimately result in a reduction in groundwater pumping within the Plan Area and should slow declining groundwater levels. The Plan Participants support these efforts and will continue to encourage other local agencies to maximize use of their surface waters to conserve groundwater resources.

Groundwater banking is the process of recharging excess surface water into the aquifer, storing the water in the aquifer for a period of time, then extracting the recharged water for delivery. This process allows surface water supplies to be extended, as available surface water can be captured, stored, and then delivered during periods of higher demand. The Plan participants will limit extraction to a percentage of the banked water such that benefits are derived for all parties involved, including adjacent landowners. In addition, banking and subsequent extraction of the banked water shall, to the extent possible, occur in close proximity to each other unless the affected parties agree otherwise, and there will be no adverse impact on the local groundwater supply. FID is developing the Waldron Banking Facility located near Kerman, and is also considering an additional banking facility in the southern portion of FID.

Direct delivery of surface water from the canal system to areas of large landscaping, such as cemeteries, golf courses, schools and parks, is another example of a conjunctive use program. Untreated surface water is filtered and then pumped into the landscape irrigation system at these sites. Certain regulations and limitations for the use of untreated surface water apply, but it is permissible. The direct delivery reduces the amount of groundwater needed, and can be less expensive than delivering surface water treated to drinking water standards. Within the Plan Area, only one school site, one park and one cemetery are known to currently be utilizing surface water for irrigation. The large irrigated turf locations are a primary concern, however there are also other locations in the western United States, including California, that are providing direct delivery of surface water for landscaping irrigation at residences. This is not being performed within the Plan Area, but is being considered.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## Existing Activities

- Pending development of Waldron Banking Facility.
- Delivery of surface water for landscaping to a few areas of large irrigated turf.

## Planned Activities

- Encourage and assist landowners and water users in the transfer of water into the Plan Area, which will have the effect of causing "in lieu" recharge.
- Pursue the acquisition of new water supplies should they become available at affordable costs.
- Support the development of new surface storage and water supply projects that would permit the participants to better utilize surface water supplies.
- Expand conveyance systems to provide surface water to additional land.
- Wherever appropriate and practical, encourage groundwater conservation through the use of available surface irrigation water for non-agricultural purposes.
- Encourage those municipal water agencies that have not already done so to contract for available surface water.
- Work with all appropriate public agencies, private organizations, and individuals within and outside of the plan area to protect existing surface water rights and supplies.
- Seek opportunities to increase conservation storage through groundwater banking programs or off-stream storage to help balance full contract supply years with drought years.
- Construct additional surface water treatment plant capacity for the Cities of Fresno and Clovis.
- Investigate additional groundwater banking facilities.
- Investigate and encourage use of surface water for irrigation of large irrigated turf such as schools, golf courses, cemeteries and parks.

## 8.5 - Wastewater Reclamation and Recycling

The recycling or reclamation of treated wastewater will extend the overall water supply within the Plan Area. The Regional Water Quality Control Board regulates the use of recycled water based on the treatment method of treatment facilities. While wastewater treatment methods are outside the scope of this plan, the overall water supply of the Plan Area is extended by the reuse of this water.

Wastewater within the City of Fresno is currently piped to the Fresno-Clovis Regional Wastewater Treatment Facility, as shown in Figure 2-1. This facility provides secondary level treatment, and nearly all of the effluent is sent to percolation ponds at the facility. A portion of the water is then reclaimed through a series of reclamation wells, and delivered to FID facilities for on-farm irrigation. The water reclaimed is metered, and the amount delivered is approximately 26,000 acre-feet per year.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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Malaga County Water District and the City of Kerman also operate smaller wastewater treatment facilities. The City of Kerman currently delivers tertiary treated wastewater from its facility to neighboring agricultural lands for irrigation. There are other smaller wastewater treatment facilities that are distributing treated wastewater for landscape and irrigation purposes.

The City of Clovis is planning construction of a WWTF in the northeast portion of the Plan Area. The City is also planning to construct distribution facilities for delivering tertiary treated water from this facility to irrigate large landscape areas, including parks, local street and Caltrans right of way landscaping, and agricultural irrigation at California State University Fresno.

## **Existing Activities**

- Delivery of reclaimed water at the Fresno-Clovis Regional WWTF.
- Direct application of effluent for irrigation at the Kerman WWTF.

## **Planned Activities**

- Explore opportunities to optimize reuse of reclaimed water from the Fresno-Clovis Regional Wastewater Treatment Facility.
- Institute water recycling program planned for reuse of wastewater at the proposed Clovis wastewater treatment facility.
- Encourage higher level treatment facilities to facilitate less restricted use of recycled water.
- Encourage new developments to incorporate dual water systems. The secondary water system would use recycled water or groundwater of marginal quality for landscape irrigation.

## **8.6 - Operation of Facilities**

The construction and proper operation of groundwater management facilities is an important facet of this plan. New facilities are needed to keep pace with increased water demands and the desire for improved management.

The participants have a number of opportunities to further improve and enhance the water and groundwater supplies of its landowners and neighbors. The participants will continue to evaluate potential projects that would involve the construction and operation of additional groundwater management facilities. Additional groundwater management facilities can provide needed flexibility and thus allow more optimal management of the groundwater.

Lastly, the members strive to provide the best facilities for delivery of surface water supplies, since they are used conjunctively with groundwater. The members realize that the success of conjunctive-use programs is often contingent on the quality of surface water and conveyance systems.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## **Existing Activities**

- Policy to keep canals unlined where practical to allow for groundwater recharge.
- Cooperative use of stormwater facilities for groundwater recharge.
- Frequent maintenance of recharge ponds to maintain higher infiltration rates.

## **Planned Activities**

- Maintain and upgrade conveyance facilities for capacity and stability.
- Improve canal maintenance procedures to eliminate or reduce canal downtime for deliveries to surface water treatment facilities.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 9 - GROUNDWATER PLANNING AND MANAGEMENT

### 9.1 - Plan Implementation

The Participants have executed a Memorandum of Understanding (MOU) to facilitate the implementation of this Plan. This Plan and associated agreement, serve as a mechanism for cooperative efforts amongst the participants and other agencies within the region. Many of the activities described in the Plan target specific locations within the Plan Area, and therefore may involve only one or a few of the participants. Although certain activities may only involve some participants, the TAC meetings will serve as the primary forum for coordination of cooperative efforts. The annual report will also summarize all related activities within the Plan Area. Implementation of this Plan is expected to result in significant amounts of new knowledge and an achievable improvement in groundwater management in the basin. The participants also recognize that implementing the GMP is in the best interest of their water users. The participants plan to continue all of the 'Existing Activities' listed throughout this Plan. Implementation of each of these tasks would be beneficial to the Plan participants, but will be contingent on available staff time and funding.

#### Planned Activities

- Implement the Planned Activities described in the Plan.
- TAC to meet semi-annually to discuss regional groundwater management. Comments on the content and value of the GMP will be solicited at each meeting.
- Prepare Annual Reports and Reevaluate the Plan as described herein.

### 9.2 - Groundwater Reports

The Participants will prepare groundwater reports every year to document groundwater levels, available groundwater storage, historical trends, groundwater quality, and progress on groundwater projects. This information will be used to forecast future problems, plan future groundwater projects, and develop new groundwater policies.

#### Existing Activities

- Several agencies prepare reports (i.e. water supply reports, water master plans, water conservation plans, urban water management plans, etc.) that document groundwater conditions. These reports will continue to be prepared for use in assessing groundwater conditions within individual agencies.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## Planned Activities

- Prepare Fresno Area Regional Groundwater Management Plan Annual Report and include information on all of the Plan participants. Plan will likely include:
  - Groundwater level data
  - Groundwater contour maps
  - Groundwater storage calculations (using specific yield values for each township and range)
  - Evaluation of one-year and five-year historical trends in groundwater levels, contours, and storage, and perceived reasons for any changes
  - Estimation of deliveries to recharge basins
  - Summary of important groundwater management actions during the period covered by the report
  - Discussion on whether management actions are meeting the management objectives
  - Summary of proposed management actions for the future
  - Summary of actions taken to coordinate with other water management, land-use and government agencies
  - Summary of groundwater related actions taken by other regional groups
  - Recommendations for changes in the content or format of the annual report
  - Recommendations for updates to the GMP
- The annual report will cover the prior calendar year and will be completed each year by May 31<sup>st</sup>.

## 9.3 - Plan Re-evaluation

Most of the strategies that make up this Plan are established policies, procedures, and ordinances. The goal of this document is to codify them for purposes of identifying an overall management program. Implementation of the various components of the Plan will continue on an on-going basis. As new policies, practices, or ordinances become necessary or desirable to enhance groundwater management, this Plan will be amended as necessary.

The Technical Advisory Committee (TAC) will be responsible for monitoring the progress of the GMP objectives. Refer to Section 5.1 for more information on the membership, policies, and procedures of the TAC. The TAC will attempt to meet twice each year to review and evaluate groundwater conditions as well as evaluate the effectiveness of the GMP.

## Planned Activities

- The TAC will meet semi-annually to discuss regional groundwater management. Comments on the content and value of the GMP will be solicited at each meeting.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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- Recommendations for modifying, updating, or expanding the GMP will be recorded annually in the Plan Group's Annual Groundwater Report.
- The GMP will be revised through a formal public process every five years, or earlier if a sufficient quantity of revisions, updates, and additions have been identified.

## 9.4 - Land Use Planning

The intent of this Plan is not to dictate land-use planning policies, but rather to establish some land-use planning goals that can aid in protecting and preserving groundwater resources. Some of the Plan participants have direct land-use planning authority while others do not. However, all of the participants have the opportunity to comment on environmental documents for land-use related activities. The Plan participants will attempt to work cooperatively with other agencies to minimize adverse impacts to groundwater supplies and quality as a result of proposed land-use changes. Some specific land-use planning goals include: (1) preserving areas with high groundwater recharge potential for recharge activities; (2) protecting areas sensitive to groundwater contamination; (3) requiring hydrogeologic investigations, water master plans, and proven and sustainable water supplies for all new developments; and (4) requiring appropriate mitigation for any adverse impacts that land use changes have on groundwater resources. A map showing the extent of the general urbanization within the Plan Area is included as Figure 9-1.

### Existing Activities

- Notify residents and agencies of projects that have the potential to impact groundwater within their sphere of influence.
- When appropriate, comment on environmental documents and land-use plans that have the potential to impact groundwater.

### Planned Activities

- Determine ways to improve communication between County, Cities and other Private/Public agencies regarding landuse changes that may have an impact on groundwater.

## 9.5 - Dispute Resolution

Each participant has their own mechanisms for dispute resolution related to groundwater issues. These may include procedures for filing complaints and appeals to a manager, board, or committee. The Plan participants recognize the importance of groundwater as their primary water source and will work diligently to resolve any groundwater disputes according to their internal rules and regulations.

This regional GMP will provide a forum for the participants to discuss groundwater related disputes and identify possible solutions. In addition, it is envisioned that the

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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regional coordination, improved communication, and multi-party projects that develop as part of this Plan will help to reduce future conflicts among the participants.

## **Planned Activities**

- Discuss issues of concern at semi-annual TAC meeting. Provide recommendations for resolution if appropriate.

## **9.6 - Program Funding and Fees**

Funding individual activities described in this Plan will be provided for in each agency's individual budget. Funding of the Plan preparation and annual report are included in the MOU for implementation. The Plan participants have a variety of options for funding groundwater projects as discussed below.

### Water Replenishment Fees

Included in the authority granted to local agencies under the California Water Code were the powers to limit groundwater extractions and implement water replenishment fees based upon the amount of water extracted (extraction based fees must first be approved by majority vote of impacted landowners). Inherent in these powers is the authority to implement metering of private wells. These are considered measures of last resort and the members will make any and all efforts to ensure the private, non-metered use of groundwater by their water users.

### Capital Improvement Fees

Some participants have the authority to finance capital improvement projects and collect repayment charges from the benefited parties. This process would require a favorable vote from the constituency approving the repayment fees prior to implementation, and is considered a realistic alternative for large capital projects to improve groundwater facilities.

### Grants

Some participants have successfully acquired funding from the DWR and other public agencies for projects that are consistent with the goals of their Groundwater Management Plan. The participants will continue to pursue available grants and low-interest loans from the DWR as well as other state and federal agencies.

### Other Revenue Sources

Groundwater projects are also financed through a variety of water user fees, property taxes, sales taxes, fine payments, and development impact fees.

### Cost Sharing Agreement

Costs for GMP updates, annual groundwater reports, and other projects involving all of the Plan participants will be distributed according to an accepted cost-sharing agreement that is documented in the MOU.

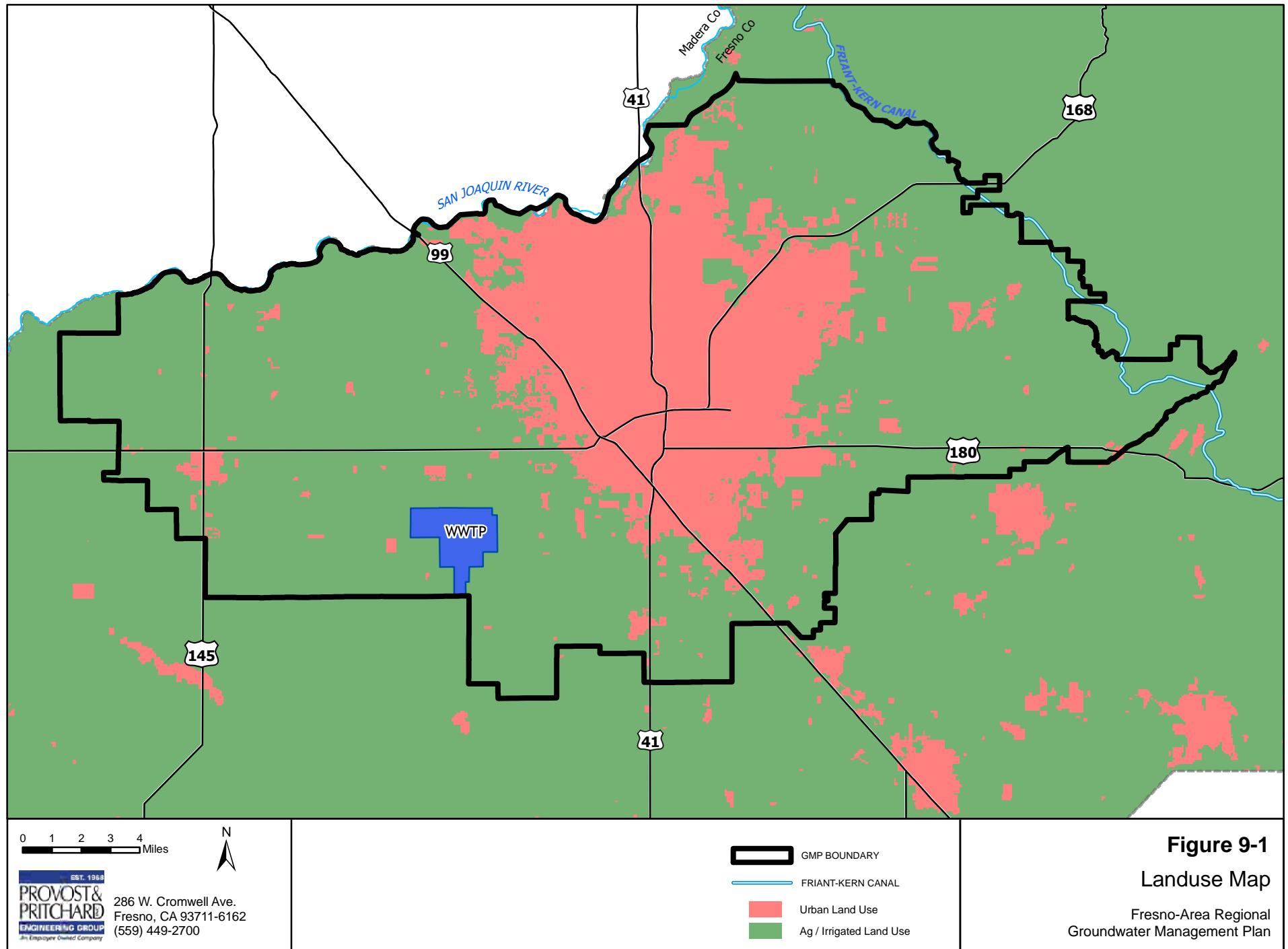
# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## **Planned Activities**

- Share information on funding opportunities for groundwater related projects.
- Identify beneficial groundwater projects that become economically feasible when costs are shared among two or more participants.



# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## 10 - REFERENCES

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## FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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17. California State University at Fresno, City of Clovis, City of Fresno, County of Fresno, and Fresno Metropolitan Flood Control District, *Fresno-Clovis Storm Water Quality Management Plan*, February 1999.
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**FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

**APPENDIX A**

**PUBLIC PARTICIPATION IN PLAN ADOPTION**

## **RESOLUTION NO. 2005-09**

### **RESOLUTION OF THE BOARD OF DIRECTORS OF THE FRESNO IRRIGATION DISTRICT**

#### **FOR INTENTION TO ADOPT THE FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the Fresno Irrigation District adopted a groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on August 12, 1996; and

WHEREAS, the Fresno Irrigation District desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Madera County Water District, Pinedale County Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions; and

WHEREAS, the District's Board of Directors believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Board of Directors believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the Fresno Irrigation District; and

WHEREAS, a public hearing was held on August 10, 2005 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan.

NOW, THEREFORE, BE IT RESOLVED, by the Board of Directors of the Fresno Irrigation District as follows:

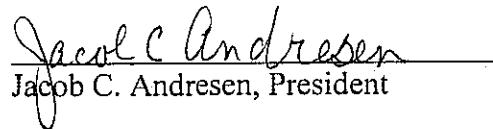
The foregoing findings are true and correct:

1. It is the intention of the Fresno Irrigation District to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with Part 2.75 of Division 6 of the California Water Code, and the District's consultant is hereby authorized and directed to draft such a plan;
2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2;
3. After such a plan has been prepared, a second public hearing will be conducted in accordance with the California Water Code Section 10753.5, et seq. to determine whether to adopt the plan;
4. That the officers of the Fresno Irrigation District are authorized and directed to publish this resolution of intention to update the District's groundwater management plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
5. That the Board of Directors hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

**RESOLVED** by the Board of Directors of the Fresno Irrigation District that the Fresno-Area Regional Groundwater Management Plan be developed to be in compliance with California Senate Bill No. 1938.

The General Manager of the Fresno Irrigation District is hereby authorized and directed to prepare the necessary data, make investigations, sign, and file such application with the California Department of Water Resources.

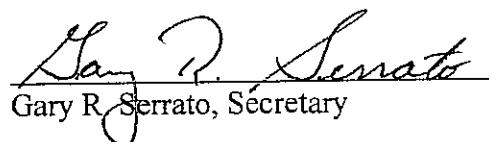
PASSED AND ADOPTED at a regular meeting of the Board of Directors of Fresno Irrigation District on August 10, 2005.

  
Jacob C. Andresen, President

## CERTIFICATE OF SECRETARY

I, GARY SERRATO, Secretary of the Fresno Irrigation District hereby certify that the Board of Directors at a regular meeting on August 10, 2005 adopted the foregoing Resolution by the following roll call vote:

	<u>Aye</u>	<u>Nay</u>	<u>Absent</u>	<u>Abstain</u>
President Andresen	✓	—	—	—
Vice-President Boswell	✓	—	—	—
Director Niederfrank	✓	—	—	—
Director Balls	✓	—	—	—
Director Neely	✓	—	—	—

  
\_\_\_\_\_  
Gary R. Serrato, Secretary

## **RESOLUTION NO. 05-140**

### **A RESOLUTION OF INTENTION OF THE COUNCIL OF THE CITY OF CLOVIS, CALIFORNIA, TO ADOPT THE FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the City of Clovis adopted a groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on November 17, 1997; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Madera County Water District, Pinedale County Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions; and

WHEREAS, the City of Clovis desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Clovis City Council believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Clovis City Council believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the City of Clovis.

NOW, THEREFORE, BE IT RESOLVED by the Clovis City Council as follows:

1. It is the intention of the City of Clovis to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with Part 2.75 of Division 6 of the California Water Code, and the Fresno Irrigation District's consultant is hereby authorized and directed to draft such a plan;
2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2;
3. After such a plan has been prepared in accordance with all applicable law, including but not limited to the California Environmental Quality Act, a second public hearing will be conducted in accordance with the California Water Code Section 10753.5, et seq. to determine whether to adopt the plan;
4. That the officers of the City of Clovis are authorized and directed to publish this resolution of intention to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
5. That the Clovis City Council hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

BE IT RESOLVED by the City Council of the City of Clovis that the Fresno-Area Regional Groundwater Management Plan be developed to be in compliance with California Senate Bill No. 1938.

The Director of Public Utilities of the City of Clovis is hereby authorized and directed to prepare the necessary data, make investigations, sign, and file such application with the California Department of Water Resources.

\* \* \* \*

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on September 6, 2005 by the following vote, to wit:

AYES: Councilmembers Armstrong, Ashbeck, Flores, Whalen, Mayor Magsig

NOES: None

ABSENT: None

ABSTAIN: None

DATED: September 6, 2005



\_\_\_\_\_  
Mayor



\_\_\_\_\_  
City Clerk

## BAKMAN WATER COMPANY

TELEPHONE (559) 255-0324 • P.O. BOX 7965 • 5105 E. BELMONT • FRESNO, CA 93747

### MINUTES OF THE SPECIAL MEETING OF THE BOARD OF DIRECTORS OF BAKMAN WATER COMPANY, A CALIFORNIA CORPORATION.

**A special meeting** of the Board of Directors of the Bakman Water Company was held at the Bakman Water Co. office located at 5105 E. Belmont Ave, Fresno, California.

**Date:** July 8, 2005      **Time:** 9:00am

**Officers present** were Richard Tim Bakman, Virginia Bakman, and Dottie Patton.

On July 8, 2005, a special meeting was called to discuss the possibility of being a part of **Memorandum of Understanding** regarding The Fresno Area Regional Groundwater Management Plan.

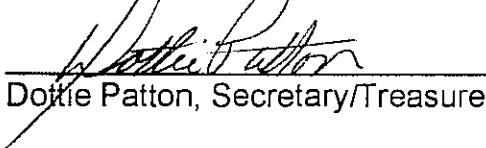
**Purpose** This MOU is intended to promote and to provide a means to establish an orderly process to share information, develop courses of action, and to resolve any issues with respect to the cooperative development of the groundwater management plan and with respect to the administration of the groundwater management plan. Administration will include coordination of data received from each party, public noticing, meetings and annual reporting as described herein. This MOU memorializes the interests, intent and responsibilities of the parties with respect to the adoption of a groundwater management plan consistent with the provisions of the California Water Code to provide for collection of data and the development of a plan for the management of groundwater resources within the jurisdictions of the parties hereto.

**Payment of Costs** Each of the parties hereto shall contribute to the cost of updating the groundwater management plan in accordance with the obligations specified in Exhibit "2" attached hereto. Additionally, any ongoing fees or costs incurred in the administration of the plan (as administration is defined and limited in Section 1 of this MOU) or of this Memorandum of Understanding will be shared by the parties in accordance with percentages identified in Exhibit "2".

The following being all of the directors of Bakman Water Company, hereby consent to and agree to be a part of the **Memorandum of Understanding** regarding The Fresno Area Regional Groundwater Management Plan.

  
Richard Tim Bakman

  
Virginia A. Bakman

  
Dottie Patton, Secretary/Treasurer



RESOLUTION NO. 2005-386

A RESOLUTION OF THE COUNCIL OF THE CITY OF FRESNO, CALIFORNIA, FOR INTENTION TO ADOPT THE FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the Fresno Irrigation District adopted a groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on August 12, 1996; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Madera County Water District, Pinedale County Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the City of Fresno desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

Adopted 10/10/05  
Approved 10/10/05  
Effective 10/10/05



WHEREAS, the Council believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Council believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the City of Fresno.

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

The foregoing findings are true and correct:

1. It is the intention of the City of Fresno to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with Part 2.75 of Division 6 of the California Water Code, and the District's consultant is hereby authorized and directed to draft such a plan;
2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2;
3. After such a plan has been prepared in accordance with all applicable law, including but not limited to the California Environmental Quality Act, a second public hearing will be conducted in accordance with the California Water Code Section 10753.5, et seq. to determine whether to adopt the plan;
4. That the officers of the City of Fresno are authorized and directed to publish this resolution of intention to update the District's groundwater management plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
5. That the Council hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

BE IT FURTHER RESOLVED that the Fresno-Area Regional Groundwater Management Plan be developed to be in compliance with California Senate Bill No. 1938.



BE IT FURTHER RESOLVED that the Director of the Department of Public Utilities is hereby authorized and directed to prepare the necessary data, make investigations, sign, and file such application with the California Department of Water Resources.

\*\*\*\*\*

STATE OF CALIFORNIA      )  
COUNTY OF FRESNO      ) ss.  
CITY OF FRESNO      )

I, REBECCA E. KLISCH, City Clerk of the City of Fresno, certify that the foregoing resolution was adopted by the Council of the City of Fresno, at a regular meeting held on the 20th day of September, 2005.

AYES : Boyajian, Calhoun, Duncan, Perea, Sterling, Westerlund, Dages  
NOES : None  
ABSENT : None  
ABSTAIN : None

REBECCA E. KLISCH  
City Clerk

BY: Rebecca Klisch  
Deputy

APPROVED AS TO FORM:  
CITY ATTORNEY'S OFFICE

BY: John H. [Signature]  
Chief Assistant City Attorney

**RESOLUTION NO. 05-\_\_\_\_\_**

**RESOLUTION OF THE OF THE BOARD OF DIRECTORS OF THE  
PINEDALE COUNTY WATER DISTRICT**

**FOR INTENTION TO ADOPT THE  
FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the Pinedale County Water District desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Board of Directors believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the Pinedale County Water District,

**BE IT RESOLVED**, by the Board of Directors as follows:

The foregoing findings are true and correct:

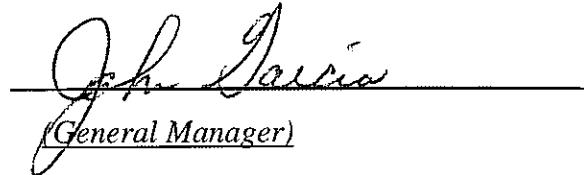
1. It is the intention of the Pinedale County Water District to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with Part 2.75 of Division 6 of the California Water Code, and the District's consultant is hereby authorized and directed to draft such a plan;

2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2;
3. After such a plan has been prepared in accordance with all applicable law, including but not limited to the California Environmental Quality Act, a second public hearing will be conducted in accordance with the California Water Code Section 10753.5, et seq. to determine whether to adopt the plan;
4. That the officers of Pinedale County Water District are authorized and directed to publish this resolution of intention to update the District's groundwater management plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
5. That the Board of Directors hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

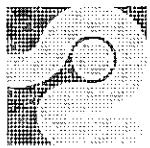
RESOLVED by the Board of Directors of the Pinedale County Water District that the Fresno-Area Regional Groundwater Management Plan be developed to be in compliance with California Senate Bill No. 1938.

The General Manager of the Pinedale County Water District is hereby authorized and directed to prepare the necessary data, make investigations, sign, and file such application with the California Department of Water Resources.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of Pinedale County Water District on 10/15, 2005.



John Garcia  
(General Manager)

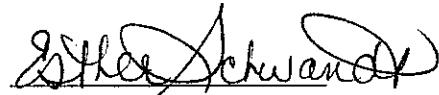


FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

## C E R T I F I C A T I O N

I, Esther Schwandt, as Clerk to the Board of Directors of the Fresno Metropolitan Flood Control District, do hereby certify the foregoing to be a full, true and correct copy of **Resolution No. 2005-473** adopted by the Board of Directors on **August 24, 2005**, the original of which is on file at the District office.

In witness whereof, I have hereunto set my hand and affixed the Seal of the Fresno Metropolitan Flood Control District.

  
**Esther Schwandt**  
**Clerk to the Board**

October 10, 2005  
**Date**

Original document bears our embossment

## **RESOLUTION NO. 2005-473**

### **BEFORE THE BOARD OF DIRECTORS OF THE FRESNO METROPOLITAN FLOOD CONTROL DISTRICT**

### **RESOLUTION OF INTENTION TO ADOPT THE FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

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WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Madera County Water District, Pinedale County Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions; and

WHEREAS, the Fresno Metropolitan Flood Control District, "District", desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

**RESOLUTION NO. 2005-473**

**Page 2 of 3**

WHEREAS, the Board of Directors believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Board of Directors believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the District,

**BE IT RESOLVED**, by the Board of Directors as follows:

The foregoing findings are true and correct:

1. It is the intention of the District to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with Part 2.75 of Division 6 of the California Water Code, and the Fresno Irrigation District's consultant is hereby authorized and directed to draft such a plan;
2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2;
3. After such a plan has been prepared in accordance with all applicable law, including but not limited to the California Environmental Quality Act, a second public hearing will be conducted in accordance with the California Water Code Section 10753.5, et seq. to determine whether to adopt the plan;

**RESOLUTION NO. 2005-473**

**Page 3 of 3**

4. That the officers of District are authorized and directed to publish this resolution of intention to update the Fresno Irrigation District's groundwater management plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
5. That the Board of Directors hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

**RESOLVED** by the Board of Directors of the District that the Fresno-Area Regional Groundwater Management Plan be developed to be in compliance with California Senate Bill No. 1938.

The General Manager-Secretary of the District is hereby authorized and directed to prepare the necessary data, make investigations, sign, and file such application with the California Department of Water Resources.

**PASSED AND ADOPTED** this 24<sup>th</sup> day of August 2005 by the following vote to wit:

AYES: Franco, Spina, Marcus, Groom, Welton, Williams and Rastegar

NOES: None

ABSTAIN: None

ABSENT: None

**RESOLUTION NO. 05-54**

**RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KERMAN APPROVING  
ENTERING INTO MEMORANDUM OF UNDERSTANDING (MOU) WITH FRESNO  
IRRIGATION DISTRICT (FID) AND OTHER AGENCIES AND WATER COMPANIES  
ON GROUNDWATER MANAGEMENT PLAN (GWMP) FOR KERMAN**

WHEREAS, the City Council of the City of Kerman (“Kerman”) as the legislative body of the City, has authorized the negotiation of a Memorandum of Understanding (MOU) with Fresno Irrigation District (“District”), the City of Fresno (“Fresno”), the City of Clovis (“Clovis”), the Fresno Metropolitan Flood Control District (“Metropolitan”), the Bakman Water Company (“Company”), the City of Kerman (“Kerman”), the County of Fresno (“County”), the Malaga County Water District (“Malaga”), and the Pinedale County Water District (“Pinedale”) to provide a means to promote an orderly process to share information, develop courses of action, and to resolve any issues with respect to the cooperative development and administration of the groundwater management plan; and

**WHEREAS**, the attached Memorandum of Understanding (MOU), Exhibit "A" memorializes the interests, intent and responsibilities of the parties with respect to the adoption of the groundwater management plan consistent with the provisions of the California Water Code; and

**WHEREAS**, conditions of the MOU are as outlined therein under Conditions and Covenants 1 through 12.

**NOW, THEREFORE, BE IT RESOLVED THAT THE CITY COUNCIL OF THE CITY  
OF KERMAN RESOLVES THAT** the City Manager is authorized to sign the Memorandum of Understanding  
regarding The Fresno Area Regional Groundwater Management Plan and the City Clerk is to attest.

The foregoing resolution was introduced at a regular meeting of the City Council of the City of Kerman held on the 6th day of July, 2005, and passed at said meeting by the following vote:

AYES: Cromartie, Rodriguez, Sidhu, Stockwell  
NOES: None  
SENT: Moore  
STAIN: None

|||||

1                   The foregoing resolution is hereby approved.

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ATTEST:

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*Laurel M. Downton*

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CITY CLERK, CITY OF KERMAN

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*Ken Moore*  
MAYOR, CITY OF KERMAN

1 CITY CLERK'S CERTIFICATE  
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EDITH M. FORSSTROM does hereby certify as follows:

That she is the City Clerk of the City of Kerman and that the foregoing Resolution, being Resolution No. 05-54 was passed at a regular meeting of the City Council of the City of Kerman held on the 6th day of July, 2005 and she further certifies that the foregoing is a true and correct copy of said Resolution No. 05-54 so adopted.

*Edith M. Forsstrom*

EDITH M. FORSSTROM, City Clerk

## **RESOLUTION NO. 05-08-23**

### **RESOLUTION OF THE BOARD OF DIRECTORS OF THE MALAGA COUNTY WATER DISTRICT**

#### **FOR INTENTION TO ADOPT THE FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the District adopted a groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on August 12, 1996; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the Malaga County Water District desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Board of Directors believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the Malaga County Water District,

**BE IT RESOLVED**, by the Board of Directors as follows:

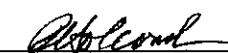
The foregoing findings are true and correct:

1. It is the intention of the Malaga County Water District to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with Part 2.75 of Division 6 of the California Water Code, and the District's consultant is hereby authorized and directed to draft such a plan;
2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2;
3. After such a plan has been prepared in accordance with all applicable law, including but not limited to the California Environmental Quality Act, a second public hearing will be conducted in accordance with the California Water Code Section 10753.5, et seq. to determine whether to adopt the plan;
4. That the officers of Malaga County Water District are authorized and directed to publish this resolution of intention to update the District's groundwater management plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
5. That the Board of Directors hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

RESOLVED by the Board of Directors of the Malaga County Water District that the Fresno-Area Regional Groundwater Management Plan be developed to be in compliance with California Senate Bill No. 1938.

The General Manager of the Malaga County Water District is hereby authorized and directed to prepare the necessary data, make investigations, sign, and file such application with the California Department of Water Resources.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of the Malaga County Water District on August 23, 2005.

  
\_\_\_\_\_  
Russ Holcomb  
General Manager

## RESOLUTION NO. 05-1201

### RESOLUTION OF THE BOARD OF DIRECTORS OF THE GARFIELD WATER DISTRICT

#### FOR INTENTION TO ADOPT THE FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the Garfield Water District desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, the Garfield Water District has agreed to the terms of the Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within its jurisdiction; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District and Bakman Water Company desire to have the Garfield Water District participate in the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on December 8, 2005 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Board of Directors believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the Garfield Water District,

BE IT RESOLVED, by the Board of Directors as follows:

The foregoing findings are true and correct:

1. It is the intention of the Garfield Water District to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with Part 2.75 of Division 6 of the California Water Code, and the District's consultant is hereby authorized and directed to draft such a plan;
2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2;
3. After such a plan has been prepared in accordance with all applicable law, including but not limited to the California Environmental Quality Act, a second public hearing will be conducted in accordance with the California Water Code Section 10753.5, et seq. to determine whether to adopt the plan;
4. That the officers of Garfield Water District are authorized and directed to publish this resolution of intention to update the District's groundwater management plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
5. That the Board of Directors hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

RESOLVED by the Board of Directors of the Garfield Water District that the Fresno-Area Regional Groundwater Management Plan be developed to be in compliance with California Senate Bill No. 1938.

The Secretary of the Garfield Water District is hereby authorized and directed to prepare the necessary data, make investigations, sign, and file such application with the California Department of Water Resources.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of Garfield Water District on December 8, 2005.

Katherine B. Alves  
Secretary

... will be conducted in advance of the Board Office, 2917 East Shepherd Avenue, Clovis, California. Opportunity for public questions and input will be provided at the hearing.

In compliance with Water Code Section 10753.4 (b), landowners and other interested parties who wish to participate in updating the groundwater management plan, may do so by attending the hearing and indicating their interest or by submitting a written letter to Gary Serrato, Secretary, Fresno Irrigation District, 2907 S. Maple Avenue, Fresno, California 93725.

/s/ **Katherine Alves**  
November 21, 2005  
(PUB: November 26, 2005)

November 26, 2005

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

Dated NOVEMBER 26, 2005

Cathy Alves

PROVOST & PRICHARD

ATTN: MICHAEL TAYLOR

286 W CROMWELL AVE

FRESNO

, CA 937116162

## PROOF OF PUBLICATION

### COUNTY OF FRESNO STATE OF CALIFORNIA

#### EXHIBIT A.

##### PUBLIC NOTICE

#104099

##### NOTICE OF ADOPTION OF RESOLUTION FOR INTENTION TO ADOPT THE FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, Bakman Water Company, City of Kerman, County of Fresno, Madera County Water District, Pinedale County Water District and Garfield Water District should adopt a resolution of intention to adopt a Fresno Area Regional Groundwater Management Plan to be in compliance with California Senate Bill No. 1938. This regional groundwater management plan will replace the existing groundwater management plans adopted by the Fresno Irrigation District and the City of Clovis. This regional groundwater management plan will also replace the County of Fresno's existing groundwater management plan for the portion of the county within the plan area.

The resolution adopted by each party reads as follows:

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Madera County Water District, Pinedale County Water District, Bakman Water Company and Garfield Water District have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the (party) desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the (party's governing body) believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the (party's governing body) believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the (party),

BE IT RESOLVED, by the (party's governing body) as follows:

The foregoing findings are true and correct:

1. It is the intention of the (party) to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with Part 2.75 of Division 6 of the California Water Code, and the District's consultant is hereby authorized and directed to draft such a plan;
2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2.

The undersigned states:

McClatchy Newspapers in and on all dates herein stated was a corporation, and the owner and publisher of The Fresno Bee.

The Fresno Bee is a daily newspaper of general circulation now published, and on all-the-dates herein stated was published in the City of Fresno, County of Fresno, and has been adjudged a newspaper of general circulation by the Superior Court of the County of Fresno, State of California, under the date of November 22, 1994, Action No. 520058-9.

The undersigned is and on all dates herein mentioned was a citizen of the United States, over the age of twenty-one years, and is the principal clerk of the printer and publisher of said newspaper; and that the notice, a copy of which is hereto annexed, marked Exhibit A, hereby made a part hereof, was published in The Fresno Bee in each issue thereof (in type not smaller than nonpareil), on the following dates.

12/20, 12/27/05

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

Dated

DECEMBER 27, 2005

*Aiko Higuchi*

PROVOST & PRICHARD

ATTN: MICHAEL TAYLOR

286 W CROMWELL AVE

FRESNO

, CA 937116162

## PROOF OF PUBLICATION

### COUNTY OF FRESNO STATE OF CALIFORNIA

#### EXHIBIT A.

##### PUBLIC NOTICE

#173824

##### NOTICE OF HEARING ON INTENTION TO ADOPT THE FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that at 4:30 pm on the 10th day of August, 2005, at the office of the Fresno Irrigation District at 2907 S. Maple Avenue, Fresno, California, a public hearing will be held to discuss whether or not the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, Bakman Water Company, City of Kerman, County of Fresno, Malaga County Water District and Pinedale County Water District should adopt a resolution of intention to adopt a Fresno Area Regional Groundwater Management Plan to be in compliance with California Senate Bill No. 1938. This regional groundwater management plan will replace the existing groundwater management plans adopted by the Fresno Irrigation District and the City of Clovis. This regional groundwater management plan will also replace the County of Fresno's existing groundwater management plan for the portion of the county within the plan area.

Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas.

Landowners within these agency boundaries and other interested parties are invited to attend the hearing. Copies of the proposed resolution and other relevant written materials will be available for review by the public at the hearing or may be obtained in advance at the District Office, 2907 S. Maple Avenue, Fresno, California 93725. Opportunity for public questions & input will be provided at the hearing.

In compliance with Water Code 10753.4 (b), landowners and other interested parties who wish to participate in updating the groundwater management plan, including becoming a member of a technical advisory committee, may do so by attending the hearing and indicating their interest or by submitting a written letter to Gary Serrato, Secretary, Fresno Irrigation District, 2907 S. Maple Avenue, Fresno, California 93725.

/s/ Gary Serrato  
General Manager

FPROC July 21, 2005

(PUB: July 26, August 2, 2005)

The undersigned states:

McClatchy Newspapers in and on all dates herein stated was a corporation, and the owner and publisher of The Fresno Bee.

The Fresno Bee is a daily newspaper of general circulation now published, and on all-the-dates herein stated was published in the City of Fresno, County of Fresno, and has been adjudged a newspaper of general circulation by the Superior Court of the County of Fresno, State of California, under the date of November 22, 1994, Action No. 520058-9.

The undersigned is and on all dates herein mentioned was a citizen of the United States, over the age of twenty-one years, and is the principal clerk of the printer and publisher of said newspaper; and that the notice, a copy of which is hereto annexed, marked Exhibit A, hereby made a part hereof, was published in The Fresno Bee in each issue thereof (in type not smaller than nonpareil), on the following dates.

July 26, 2005;  
Aug. 2, 2005

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

Dated

AUGUST 2, 2005

Cathy H. Guileca

# EXHIBIT A.

## PUBLIC NOTICE

#104099

### NOTICE OF ADOPTION OF RESOLUTION FOR INTENTION TO ADOPT THE FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, Bakman Water Company, City of Kerman, County of Fresno, Malaga County Water District, Pinedale County Water District and Garfield Water District should adopt a resolution of intention to adopt a Fresno Area Regional Groundwater Management Plan to be in compliance with California Senate Bill No. 1938. This regional groundwater management plan will replace the existing groundwater management plans adopted by the Fresno Irrigation District and the City of Clovis. This regional groundwater management plan will also replace the County of Fresno's existing groundwater management plan for the portion of the county within the plan area.

The resolution adopted by each party reads as follows:

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Bakman Water Company and Garfield Water District have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the (party) desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the (party's governing body) believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the (party's governing body) believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the (party),

BE IT RESOLVED, by the (party's governing body) as follows:

The foregoing findings are true and correct:

1. It is the intention of the (party) to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with Part 2.75 of Division 6 of the California Water Code, and the District's consultant is hereby authorized and directed to draft such a plan;
2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2;
3. After such a plan has been prepared in accordance with all applicable law, including but not limited to the California Environmental Quality Act, a second public hearing will be conducted in accordance with the California Water Code Section 10753.5, et seq. to determine whether to adopt the plan;
4. That the officers of (party) are authorized and directed to publish this resolution of intention to update the District's groundwater management plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
5. That the (party's governing body) hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

RESOLVED by the (party's governing body) of the (party) that the Fresno-Area Regional Groundwater Management Plan be developed to be in compliance with California Senate Bill No. 1938.

The of the (party) is hereby authorized and directed to prepare the necessary data, make investigations, sign, and file such application with the California Department of Water Resources.

The resolutions were adopted on the following dates: Fresno Irrigation District on 8/10/2005, City of Clovis on 9/6/2005, Bakman Water Company on 7/8/2005, County of Fresno on 10/11/2005, City of Fresno on 9/20/2005, Pinedale County Water District on 10/5/2005, Fresno Metropolitan Flood Control District on 8/24/2005, City of Kerman on 7/6/2005, Malaga County Water District on 8/23/2005, and Garfield Water District on 12/8/2005.

PROVOST & PRICHARD

ATTN: MICHAEL TAYLOR  
286 W CROMWELL AVE

FRESNO , CA 937116162

## PROOF OF PUBLICATION

### COUNTY OF FRESNO STATE OF CALIFORNIA

#### EXHIBIT A.

##### PUBLIC NOTICE

#47015

##### NOTICE OF HEARING ON INTENTION TO ADOPT THE FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that at five o'clock on the 25th day of January, 2006, at the office of the Fresno Irrigation District at 2907 S. Maple Avenue, Fresno, California, a public hearing will be held to discuss whether or not the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, Bakman Water Company, City of Kerman, County of Fresno, Madera County Water District, Pinedale County Water District, and Garfield Water District should adopt a resolution of intention to adopt a Fresno Area Regional Groundwater Management Plan to be in compliance with California Senate Bill No. 1938. This regional groundwater management plan will replace the existing groundwater management plans adopted by the Fresno Irrigation District and the City of Clovis. This regional groundwater management plan will also replace the County of Fresno's existing groundwater management plan for the portion of the county within the plan area.

Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas. The Plan includes the required sections for groundwater management plan, as cited in Section 10753 of the California Water Code and Department of Water Resources recommendations as indicated in DWR Bulletin 118, Appendix C. A Technical Advisory Committee of agency representatives and landowners has provided input for the development of the Plan. The Plan includes regional groundwater management objectives, and a listing of existing and planned groundwater management actions to accomplish these objectives.

Landowners within these agency boundaries and other interested parties are invited to attend the hearing. Copies of the proposed resolution and other relevant written materials will be available for review by the public at the hearing or may be obtained in advance at the District Office, 2907 S. Maple Avenue, Fresno, California 93725. Opportunity for public questions & input will be provided at the hearing.

In compliance with Water Code Section 10753.4 (b), landowners and other interested parties who wish to participate in updating the groundwater management plan, including becoming a member of a technical advisory committee, may do so by attending the hearing and indicating their interest or by submitting a written letter to Gary Serrato, Secretary, Fresno Irrigation District, 2907 S. Maple Avenue, Fresno, California 93725.

*/s/ Gary Serrato*  
General Manager

January 5, 2006

(PUB: January 10, 2006)

The undersigned states:

McClatchy Newspapers in and on all dates herein stated was a corporation, and the owner and publisher of The Fresno Bee.

The Fresno Bee is a daily newspaper of general circulation now published, and on all-the-dates herein stated was published in the City of Fresno, County of Fresno, and has been adjudged a newspaper of general circulation by the Superior Court of the County of Fresno, State of California, under the date of November 22, 1994, Action No. 520058-9.

The undersigned is and on all dates herein mentioned was a citizen of the United States, over the age of twenty-one years, and is the principal clerk of the printer and publisher of said newspaper; and that the notice, a copy of which is hereto annexed, marked Exhibit A, hereby made a part hereof, was published in The Fresno Bee in each issue thereof (in type not smaller than nonpareil), on the following dates.

*January 10, 2006*

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

Dated

JANUARY 17, 2006

*Cathy Aguirre*

PROVOST & PRICHARD

ATTN: MICHAEL TAYLOR

286 W CROMWELL AVE

FRESNO

, CA 937116162

## PROOF OF PUBLICATION

### COUNTY OF FRESNO STATE OF CALIFORNIA

#### EXHIBIT A.

##### PUBLIC NOTICE

#167234

##### NOTICE OF ADOPTION OF RESOLUTION FOR INTENTION TO ADOPT THE FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, Bakman Water Company, City of Kerman, County of Fresno, Malaga County Water District, Pinedale County Water District and Garfield Water District should adopt a resolution of intention to adopt a Fresno Area Regional Groundwater Management Plan to be in compliance with California Senate Bill No. 1938. This regional groundwater management plan will replace the existing groundwater management plans adopted by the Fresno Irrigation District and the City of Clovis. This regional groundwater management plan will also replace the County of Fresno's existing groundwater management plan for the portion of the county within the plan area.

The resolution adopted by each party reads as follows:

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Bakman Water Company and Garfield Water District have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the (party) desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the (party's governing body) believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the (party's governing body) believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the (party),

BE IT RESOLVED, by the (party's governing body) as follows:

The foregoing findings are true and correct:

1. It is the intention of the (party) to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with Part 2.75 of Division 6 of the California Water Code, and the District's consultant is hereby authorized and directed to draft such a plan;
2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2;
3. After such a plan has been prepared in accordance with all applicable law, including but not limited to the California Environmental Quality Act, a second public hearing will be conducted in accordance with the California Water Code Section 10753.5, et seq., to determine whether to adopt the plan;

The undersigned states:

McClatchy Newspapers in and on all dates herein stated was a corporation, and the owner and publisher of The Fresno Bee.

The Fresno Bee is a daily newspaper of general circulation now published, and on all-the-dates herein stated was published in the City of Fresno, County of Fresno, and has been adjudged a newspaper of general circulation by the Superior Court of the County of Fresno, State of California, under the date of November 22, 1994, Action No. 520058-9.

The undersigned is and on all dates herein mentioned was a citizen of the United States, over the age of twenty-one years, and is the principal clerk of the printer and publisher of said newspaper; and that the notice, a copy of which is hereto annexed, marked Exhibit A, hereby made a part hereof, was published in The Fresno Bee in each issue thereof (in type not smaller than nonpareil), on the following dates.

November 24, December 1, 2006

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

Dated

DECEMBER

1, 2006

*Cathy Henlen*

# EXHIBIT A.

## PUBLIC NOTICE

#167234

### NOTICE OF ADOPTION OF RESOLUTION FOR INTENTION TO ADOPT THE FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, Bakman Water Company, City of Kerman, County of Fresno, Malaga County Water District, Pinedale County Water District and Garfield Water District should adopt a resolution of intention to adopt a Fresno Area Regional Groundwater Management Plan to be in compliance with California Senate Bill No. 1938. This regional groundwater management plan will replace the existing groundwater management plans adopted by the Fresno Irrigation District and the City of Clovis. This regional groundwater management plan will also replace the County of Fresno's existing groundwater management plan for the portion of the county within the plan area.

The resolution adopted by each party reads as follows:

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Bakman Water Company and Garfield Water District have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the (party) desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the (party's governing body) believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the (party's governing body) believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the (party),

BE IT RESOLVED, by the (party's governing body) as follows:

The foregoing findings are true and correct:

1. It is the intention of the (party) to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with Part 2.75 of Division 6 of the California Water Code, and the District's consultant is hereby authorized and directed to draft such a plan;
2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2;
3. After such a plan has been prepared in accordance with all applicable law, including but not limited to the California Environmental Quality Act, a second public hearing will be conducted in accordance with the California Water Code Section 10753.5, et seq. to determine whether to adopt the plan;
4. That the officers of (party) are authorized and directed to publish this resolution of intention to update the District's groundwater management plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
5. That the (party's governing body) hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

RESOLVED by the (party's governing body) of the (party) that the Fresno-Area Regional Groundwater Management Plan be developed to be in compliance with California Senate Bill No. 1938.

The (agency authorized representative) of the (party) is hereby authorized and directed to prepare the necessary data, make investigations, sign, and file such application with the California Department of Water Resources.

The resolutions were adopted on the following dates: Fresno Irrigation District on 1/25/06, City of Clovis on 2/13/06, Bakman Water Company on 3/13/06, County of Fresno on 7/18/06, City of Fresno on 4/18/06; Pinedale County Water District on 9/20/06, Fresno Metropolitan Flood Control District on 2/8/06, City of Kerman on 3/1/06, Malaga County Water District on 2/14/06, and Garfield Water District on 11/1/06.

**FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

**APPENDIX B**

**RESOLUTIONS TO ADOPT PLAN**

## **RESOLUTION NO. 2006-03**

### **RESOLUTION OF THE BOARD OF DIRECTORS OF THE FRESNO IRRIGATION DISTRICT**

#### **ADOPTING THE FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the District adopted a groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on August 12, 1996; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Madera County Water District, Pinedale County Water District, Garfield Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the Fresno Irrigation District desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the intent to prepare the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors of the Fresno Irrigation District adopted a Resolution of Intent to Prepare the Fresno-Area Regional Groundwater Management Plan on August 10, 2005; and

WHEREAS, the public was invited to participate in the development of the Fresno-Area Regional Groundwater Management and a Technical Advisory Committee comprised of landowners and participant representatives was formed and met regularly to develop the Plan; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on January 25, 2006 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Board of Directors believes the adoption of the Fresno-Area Regional Groundwater Management Plan is in the best interests of its constituents and water users and can help meet the projected long-term water needs of the Fresno Irrigation District,

BE IT RESOLVED, by the Board of Directors as follows:

The foregoing findings are true and correct:

1. That the Board of Directors of the Fresno Irrigation District does hereby adopt the Fresno-Area Regional Groundwater Management Plan as submitted on the date of this resolution.
2. That the officers of Fresno Irrigation District are authorized and directed to publish this resolution of adopt the Fresno-Area Regional Groundwater Management Plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
3. That the Board of Directors hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

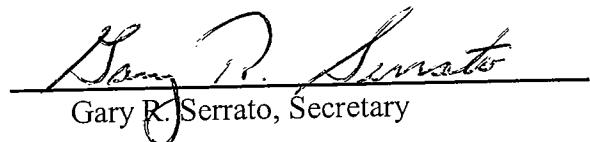
PASSED AND ADOPTED at a regular meeting of the Board of Directors of Fresno Irrigation District on January 25, 2006.

Jacob C. Andresen  
Jacob C. Andresen, President

**CERTIFICATE OF SECRETARY**

I hereby certify that I am the Secretary of the Fresno Irrigation District and that the foregoing Resolution was duly adopted by the Board of Directors of said District at the Special Meeting duly held in Fresno, California on January 25, 2006, at which meeting a quorum of said Board of Directors was at all times present and acting.

**IN WITNESS WHEREOF**, I have hereunto set my hand and seal of said District this 25<sup>th</sup> day of January, 2006.

  
\_\_\_\_\_  
Gary R. Serrato, Secretary

	<u>Aye</u>	<u>Nay</u>	<u>Absent</u>	<u>Abstain</u>
President Andresen	/	—	—	—
Vice-President Boswell	/	—	—	—
Director Niederfrank	/	—	—	—
Director Balls	/	—	—	—
Director Neely	/	—	—	—

## RESOLUTION NO. 06-37

### A RESOLUTION OF THE COUNCIL OF THE CITY OF CLOVIS ADOPTING THE FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the City of Clovis adopted a groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on November 17, 1997; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Garfield Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions; and

WHEREAS, the City of Clovis desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the intent to prepare the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the City Council of the City of Clovis adopted a Resolution of Intention to Adopt the Fresno-Area Regional Groundwater Management Plan on September 6, 2005; and

WHEREAS, the public was invited to participate in the development of the Fresno-Area Regional Groundwater Management and a Technical Advisory Committee comprised of landowners and participant representatives was formed and met regularly to develop the Plan; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on January 25, 2006 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Clovis City Council believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Clovis City Council believes the adoption of the Fresno-Area Regional Groundwater Management Plan is in the best interests of its constituents and water users and can help meet the projected long-term water needs of the City of Clovis,

BE IT RESOLVED, by the Clovis City Council as follows:

The foregoing findings are true and correct:

1. That the Council of the City of Clovis does hereby adopt the Fresno-Area Regional Groundwater Management Plan as submitted on the date of this resolution.
2. That the officers of the City of Clovis are authorized and directed to publish this resolution of adoption of the Fresno-Area Regional Groundwater Management Plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
3. That the Clovis City Council hereby authorizes the Public Utilities Director to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

\* \* \* \* \*

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on February 13, 2006, by the following vote, to wit:

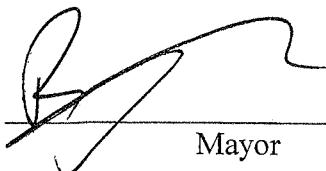
AYES: Councilmembers Armstrong, Ashbeck, Flores, Whalen

NOES: None

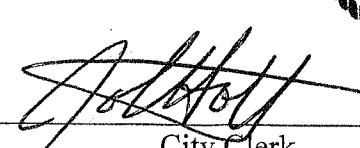
ABSENT: Mayor Magsig

ABSTAIN: None

DATED: February 13, 2006



\_\_\_\_\_  
Mayor



\_\_\_\_\_  
City Clerk

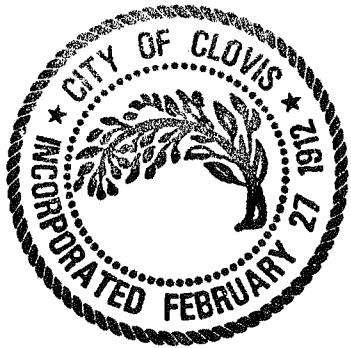


The seal of the City of Clovis, featuring a circular design with a tree in the center, surrounded by the text "CITY OF CLOVIS" at the top and "INCORPORATED FEBRUARY 27 1912" at the bottom, with stars on either side.

## CLERK'S CERTIFICATE

I, Diana Stice, Deputy City Clerk of the City of Clovis do hereby certify that the attached is a true and correct copy of Resolution 06-37 dated February 13, 2006 as it appears in the Office of the City Clerk.

IN WITNESS WHEREOF, I hereunto set my hand and affix the seal of the City of Clovis on February 22, 2006.



Diana Stice

Diana Stice, Deputy City Clerk

## **RESOLUTION NO. 06-01**

### **RESOLUTION OF THE BOARD OF DIRECTORS OF THE BAKMAN WATER COMPANY**

#### **ADOPTING THE FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the District adopted a groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on August 12, 1996; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Garfield Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the Bakman Water Company desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the intent to prepare the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors of the Bakman Water Company adopted a Resolution of Intent to Prepare the Fresno-Area Regional Groundwater Management Plan on August 10, 2005; and

WHEREAS, the public was invited to participate in the development of the Fresno-Area Regional Groundwater Management and a Technical Advisory Committee comprised of landowners and participant representatives was formed and met regularly to develop the Plan; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on January 25, 2006 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Board of Directors believes the adoption of the Fresno-Area Regional Groundwater Management Plan is in the best interests of its constituents and water users and can help meet the projected long-term water needs of the Bakman Water Company,

BE IT RESOLVED, by the Board of Directors as follows:

The foregoing findings are true and correct:

1. That the Board of Directors of the Bakman Water Company does hereby adopt the Fresno-Area Regional Groundwater Management Plan as submitted on the date of this resolution.
2. That the officers of Bakman Water Company are authorized and directed to publish this resolution of adopt the Fresno-Area Regional Groundwater Management Plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
3. That the Board of Directors hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of Bakman Water Company on March 13, 2006.



President

## BAKMAN WATER COMPANY

TELEPHONE (559) 255-0324 • P.O. BOX 7965 • 5105 E. BELMONT • FRESNO, CA 93747

**MINUTES OF THE SPECIAL MEETING OF  
THE BOARD OF DIRECTORS OF  
BAKMAN WATER COMPANY, A CALIFORNIA CORPORATION.**

**A special meeting** of the Board of Directors of the Bakman Water Company was held at the Bakman Water Co. office located at 5105 E. Belmont Ave, Fresno, California.

**Date:** March 13, 2006

**Time:** 9:00am

**Officers present were Richard Tim Bakman, Virginia Bakman, and Dottie Patton.**

On March 13, 2005, a special meeting was called to discuss the possibility of adopting the **Fresno-Area Regional Groundwater Management Plan**

The following being all of the directors of Bakman Water Company, hereby PASSED AND ADOPTED the **Fresno-Area Regional Groundwater Management Plan** on March 13, 2006.

Richard Tim Bakman

Virginia A. Bakman

Dottie Patton, Secretary/Treasurer



**RESOLUTION NO. 06-464**

**RESOLUTION OF THE BOARD OF SUPERVISORS OF THE  
COUNTY OF FRESNO**

**ADOPTING THE  
FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the District adopted a groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on August 12, 1996; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Garfield Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the Board of Supervisors desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the intent to prepare the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Supervisors of the County of Fresno adopted a Resolution of Intent to Prepare the Fresno-Area Regional Groundwater Management Plan on October 11, 2005; and

WHEREAS, the public was invited to participate in the development of the Fresno-Area Regional Groundwater Management and a Technical Advisory Committee comprised of landowners and participant representatives was formed and met regularly to develop the Plan; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on January 25, 2006 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Supervisors believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Board of Supervisors believes the adoption of the Fresno-Area Regional Groundwater Management Plan is in the best interests of its constituents and water users and can help meet the projected long-term water needs of the County of Fresno,

BE IT RESOLVED, by the Board of Supervisors as follows:

The foregoing findings are true and correct:

1. That the Board of Supervisors of the County of Fresno do hereby adopt the Fresno-Area Regional Groundwater Management Plan as submitted on the date of this resolution.
2. That the officers of County of Fresno are authorized and directed to publish this resolution of adopt the Fresno-Area Regional Groundwater Management Plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
3. That the Board of Supervisors hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

1 THE FOREGOING was passed and adopted by the following vote of the Board of  
2 Supervisors of the County of Fresno this 18<sup>th</sup> day of July, 2006, to-wit:

3 AYES: Supervisors Anderson, Case, Perea, Waterston, Larson

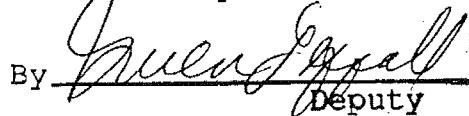
4 NOES: None

5 ABSENT: None

6  
7  
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10   
11 CHAIRMAN, Board of Supervisors

12 ATTEST:

13 BERNICE E. SEIDEL, Clerk  
14 Board of Supervisors

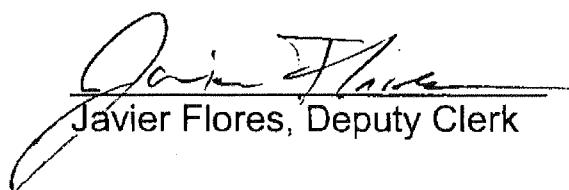
15 By   
16 Deputy

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18  
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23  
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25  
26 Agenda #5

27 Resolution #06-46<sup>4</sup>

## CERTIFICATE OF DELIVERY OF DOCUMENT

I am employed by the County of Fresno as a Deputy Clerk of the Board of Supervisors. On July 18, 2006, I delivered a copy of Resolution No. 06-464 to the Chairman of the Fresno County Board of Supervisors.



Javier Flores  
Javier Flores, Deputy Clerk



A RESOLUTION OF THE COUNCIL OF THE CITY OF FRESNO, CALIFORNIA, ADOPTING THE FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the Fresno Irrigation District adopted a groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on August 12, 1996; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Garfield Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the City of Fresno desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the intent to prepare the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Council of the City of Fresno adopted a Resolution of Intent to Prepare the Fresno-Area Regional Groundwater Management Plan on September 20, 2005; and

Adopted 10/10/06  
Approved 10/10/06  
Effective 10/10/06



Management Plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;

4. That the Council hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

\*\*\*\*\*

STATE OF CALIFORNIA      )  
COUNTY OF FRESNO      ) ss.  
CITY OF FRESNO      )

I, REBECCA E. KLISCH, City Clerk of the City of Fresno, certify that the foregoing resolution was adopted by the Council of the City of Fresno, at a regular meeting held on the 18th day of April, 2006.

AYES      :      Boyajian, Calhoun, Dages, Perea, Sterling, Westerlund, Duncan  
NOES      :      None  
ABSENT    :      None  
ABSTAIN   :      None

REBECCA E. KLISCH  
City Clerk

BY: Rebecca Klisch  
Deputy

APPROVED AS TO FORM:  
CITY ATTORNEY'S OFFICE

BY: John C. Hays  
Deputy City Attorney

JCH:ns [37884ns/jch] - 4/10/06

**RESOLUTION NO. 7 OF 2006**  
**PINEDALE COUNTY WATER DISTRICT**  
**FRESNO COUNTY, CALIFORNIA**

**RESOLUTION ADOPTING THE FRESNO-AREA REGIONAL  
GROUNDWATER MANAGEMENT PLAN**

**WHEREAS**, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

**WHEREAS**, a groundwater management plan consistent with the provisions of California Water Code Section 10750, et seq, was adopted on August 12, 1996, and

**WHEREAS**, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Madera County Water District, Pinedale County Water District, Garfield Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

**WHEREAS**, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions, and

**WHEREAS**, the Pinedale County Water District desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et seq.; and

**WHEREAS**, a public hearing was duly noticed consistent with California Water Code Section 10753.2 (a), and held on August 10, 2005 to discuss whether or not to adopt a resolution of intention to draft a groundwater management plan for the purpose of establishing a groundwater management program: and

**WHEREAS**, after the hearing, the Pinedale County Water District adopted a Resolution of Intention to draft a ground water management plan in accord with the provisions of California Water Code Section 10753.2(b), and

**WHEREAS**, the Pinedale County Water District, after its adoption of said Resolution of Intention, caused said Resolution of Intention to be published pursuant to Section 6066 of the Government Code, and

**WHEREAS**, a Working Draft of the Fresno Area Regional Groundwater Management was prepared on behalf of the parties to the aforementioned Memorandum of Understanding, and

**WHEREAS**, a public hearing was duly noticed and heard pursuant to the provisions of Water Code Section 10753.5, and

**WHEREAS**, the Board of Directors believes that groundwater can best be managed by local agencies in coordination with owners of lands overlying the groundwater basin; and

**WHEREAS**, the Board of Directors believes the adoption of the Fresno-Area Regional Groundwater Management Plan is in the best interest of its constituents and water users and can help meet the projected long-term water needs of the Pinedale County Water District.

**BE IT RESOLVED**, by the Board of Directors as follows:

The foregoing findings are true and correct:

1. That the Board of Directors of the Pinedale County Water District does hereby adopt the Fresno-Area Regional Groundwater Management Plan as submitted on the date of this Resolution.
2. That the Board of Directors of the Pinedale County Water District hereby authorizes its Officers to execute all documents and to take any other action necessary or advisable to carry out the purposes of this Resolution.

**PASSED AND ADOPTED** at a regular meeting of the Board of Directors of the Pinedale County Water District this 20th day of September 2006 by the following vote:

AYES : RICHARD BURRILL, NICOLE COOPER,  
EDWARD HIGGASON, DAVID RODRIGUEZ,  
DELTES COOPER

NOES : NONE

ABSENT : NONE

S/ RICHARD BURRILL  
RICHARD BURRILL, President of the Board  
of Directors of Pinedale County Water District.

S/ PAM EINSEL  
PAM EINSEL, Secretary of the  
Pinedale County Water District

Eugene L. Adams  
ATTORNEY AT LAW  
3554 W. Magill Ave  
Fresno, CA 93711-0815  
(559) 485-4611

## SECRETARY'S CERTIFICATE

I, PAM EINSEL, Secretary of the Pinedale County Water District, do hereby certify that the foregoing is a full, true and correct copy of a Resolution duly adopted at a regular meeting of the Board of Directors of said Pinedale County Water District, duly and legally held at the regular meeting place thereof on the 20th day of September, 2006, of which meeting all of the members of said Board had due notice and at which a majority thereof were present; that at said meeting, said Resolution was introduced by Director EDWARD HIGGASON and read in full and was, thereupon, on motion of Director EDWARD HIGGASON, seconded by Director DAVID RODRIGUEZ and adopted by the following vote:

AYES : RICHARD BURRILL, EDWARD HIGGASON  
DAVID RODRIGUEZ, DELTES COOPER, NICOLE COOPER

NOES : NONE

ABSENT: NONE

That I have carefully compared the same with the original minutes of said meeting on file in my office and that said Resolution is a full, true and correct copy of the original Resolution adopted at said meeting and entered in said minutes. That said Resolution has not been amended, modified or rescinded since the date of its adoption and the same is now in full force and effect

WITNESS MY HAND and the Seal of said District this 6<sup>th</sup> day of October, 2006.

  
\_\_\_\_\_  
PAM EINSEL, Secretary of the  
Pinedale County Water District

**RESOLUTION NO. 2006-490**

**BEFORE THE BOARD OF DIRECTORS OF THE  
FRESNO METROPOLITAN FLOOD CONTROL DISTRICT**

**RESOLUTION ADOPTING THE FRESNO-AREA  
REGIONAL GROUNDWATER MANAGEMENT PLAN**

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WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the District adopted a Groundwater Management Plan consistent with the provisions of the California Water Code Section 10750 et. seq. on August 12, 1996; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Garfield Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions; and

WHEREAS, the Fresno Metropolitan Flood Control District desires to adopt a Groundwater Management Plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

**RESOLUTION NO. 2006-490**  
**Page 2 of 3**

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the intent to prepare the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors of the Fresno Metropolitan Flood Control District adopted a Resolution of Intent to Prepare the Fresno-Area Regional Groundwater Management Plan on August 24, 2005; and

WHEREAS, the public was invited to participate in the development of the Fresno-Area Regional Groundwater Management and a Technical Advisory Committee comprised of landowners and participant representatives was formed and met regularly to develop the Plan; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on January 25, 2006 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Board of Directors believes the adoption of the Fresno-Area Regional Groundwater Management Plan is in the best interests of its constituents and water users and can help meet the projected long-term water needs of the Fresno Metropolitan Flood Control District; and

**RESOLUTION NO. 2006-490**

**Page 3 of 3**

**BE IT RESOLVED**, by the Fresno Metropolitan Flood Control District as follows:

The foregoing findings are true and correct:

1. That the Board of Directors of the Fresno Metropolitan Flood Control District does hereby adopt the Fresno-Area Regional Groundwater Management Plan as submitted on the date of this Resolution.
2. That the officers of the Fresno Metropolitan Flood Control District are authorized and directed to publish this resolution of adopt the Fresno-Area Regional Groundwater Management Plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
3. That the Board of Directors hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

**PASSED AND ADOPTED** by the Board of Directors of the District this 8<sup>th</sup> day of February 2006 by the following vote, to wit:

**AYES:** Directors Franco, Welton, Spina, Groom, Williams and Rastegar

**NOES:** None

**ABSENT:** Director Marcus

**ABSTAIN:** None

## **RESOLUTION NO. 06-17**

### **RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KERMAN**

#### **ADOPTING THE FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the District adopted a groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on August 12, 1996; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Garfield Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the City Council of the City of Kerman desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the intent to prepare the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the of the City Council of the City of Kerman adopted a Resolution of Intent to Prepare the Fresno-Area Regional Groundwater Management Plan on August 10, 2005; and

WHEREAS, the public was invited to participate in the development of the Fresno-Area Regional Groundwater Management and a Technical Advisory Committee comprised of landowners and participant representatives was formed and met regularly to develop the Plan; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on January 25, 2006 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the City Council of the City of Kerman believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

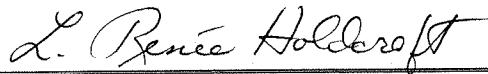
WHEREAS, the City Council of the City of Kerman believes the adoption of the Fresno-Area Regional Groundwater Management Plan is in the best interests of its constituents and water users and can help meet the projected long-term water needs of the City of Kerman,

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

The foregoing findings are true and correct:

1. That the City Council of the City of Kerman does hereby adopt the Fresno-Area Regional Groundwater Management Plan as submitted on the date of this resolution.
2. That the officers of City Council of the City of Kerman are authorized and directed to publish this resolution of adopt the Fresno-Area Regional Groundwater Management Plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
3. That the City Council of the City of Kerman hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

PASSED AND ADOPTED at a regular meeting of the City Council of the City of Kerman on the 1<sup>st</sup> day of March, 2006.



CITY CLERK, CITY OF KERMAN

The foregoing resolution was adopted at a regular meeting of the City Council of the City of Kerman on the 1<sup>st</sup> day of March, 2006, and passed at said meeting by the following vote:

AYES: Cromartie, Rodriguez, Sidhu, Stockwell

NOES: None

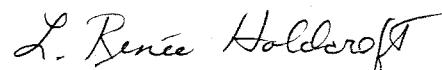
ABSENT: None

ABSTAIN: Council Member Moore

The foregoing resolution is hereby approved.

  
\_\_\_\_\_  
MAYOR, CITY OF KERMAN

ATTEST:

  
\_\_\_\_\_  
CITY CLERK, CITY OF KERMAN

**CITY CLERK  
RESOLUTION CERTIFICATION**

I, L. RENEE HOLDCROFT, do hereby certify as follows:

That I am the City Clerk of the City of Kerman and that the foregoing document, being Resolution No. 66-17, was passed at a regular meeting of the City Council of the City of Kerman held on the 1<sup>st</sup> day of March, 2006 and I further certify that the foregoing is a true and correct copy of the document so adopted.

---

6-1-06

DATE

*L. Renee Holdcroft*

---

L. RENEE HOLDCROFT  
City Clerk

**RESOLUTION NO. 02-14-06 (B)**

**RESOLUTION OF THE BOARD OF DIRECTORS OF THE  
MALAGA COUNTY WATER DISTRICT**

**ADOPTING THE  
FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the District adopted a groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on August 12, 1996; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Garfield Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

WHEREAS, the Malaga County Water District desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on August 10, 2005 to discuss the intent to prepare the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors of the Malaga County Water District adopted a Resolution of Intent to Prepare the Fresno-Area Regional Groundwater Management Plan on August 10, 2005; and

WHEREAS, the public was invited to participate in the development of the Fresno-Area Regional Groundwater Management and a Technical Advisory Committee comprised of landowners and participant representatives was formed and met regularly to develop the Plan; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on January 25, 2006 to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Board of Directors believes the adoption of the Fresno-Area Regional Groundwater Management Plan is in the best interests of its constituents and water users and can help meet the projected long-term water needs of the Malaga County Water District,

BE IT RESOLVED, by the Board of Directors as follows:

The foregoing findings are true and correct:

1. That the Board of Directors of the Malaga County Water District does hereby adopt the Fresno-Area Regional Groundwater Management Plan as submitted on the date of this resolution.
2. That the officers of the Malaga County Water District are authorized and directed to publish this resolution of adopt the Fresno-Area Regional Groundwater Management Plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request;
3. That the Board of Directors hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of Malaga County Water District on February 14, 2006.



Russ Holcomb  
General Manager

**RESOLUTION No. 06-1101**

**RESOLUTION OF THE BOARD OF DIRECTORS OF THE  
GARFIELD WATER DISTRICT**

**FOR INTENTION TO ADOPT THE  
FRESNO-AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

WHEREAS, Part 2.75 of Division 6 of the California Water Code permits the adoption and implementation of groundwater management plans to encourage authorized local agencies to manage groundwater resources within their service areas; and

WHEREAS, the Fresno Irrigation District, City of Fresno, City of Clovis, Fresno Metropolitan Flood Control District, County of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Garfield Water District and Bakman Water Company have entered into a Memorandum of Understanding to cooperate and participate in the development of the Fresno-Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions within their respective jurisdictions; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions; and

WHEREAS, the Garfield Water District desires to adopt a groundwater management plan that is consistent with recent amendments to the provisions of the California Water Code Section 10750 et seq.; and

WHEREAS, a public hearing was duly noticed consistent with California Water Code Section 10753.2(a), and held on March 1, 2006, to discuss the adoption and implementation of the Fresno-Area Regional Groundwater Management Plan; and

WHEREAS, the Board of Directors believes that groundwater can best be managed, as in the past, by local agencies in coordination with owners of lands overlying the groundwater basin; and

WHEREAS, the Board of Directors believes the updating and adoption of a new groundwater management plan will be in the best interests of its constituents and water users and can help meet the projected long-term water needs of the Garfield Water District,

BE IT RESOLVED, by the Board of Directors as follows:

The foregoing findings are true and correct:

1. It is the intention of the Garfield Water District to adopt the Fresno-Area Regional Groundwater Management Plan in accordance with part 2.75 of Division 6 of the California Water Code, and the District's engineer is hereby authorized to represent the Garfield Water District in any joint management proceedings;
2. That this resolution shall be deemed a resolution of intention in accordance with California Water Code Section 10753.2;
3. That the plan has been prepared in accordance with all applicable laws, including, but not limited to the California Environmental Quality Act, and a public hearing has been conducted in accordance with the California Water Code Section 10753.5 et seq. to determine whether to adopt the plan;
4. That the officers of Garfield Water District have published a resolution of intention to update the Garfield Water District's groundwater management plan in accordance with the provisions of California Water Code Section 10753.3 and to provide interested persons with a copy of this resolution upon written request; and
5. That the Board of Directors hereby authorizes its officers to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

RESOLVED by the Board of Directors of the Garfield Water District that the Fresno-Area Regional Groundwater Management Plan be deemed to be in compliance with California Senate Bill No. 1938.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of Garfield Water District on November 1, 2006.

Katherine B. Alves  
Katherine Alves, Secretary

SECRETARY'S CERTIFICATE

I, KATHERINE ALVES, the undersigned do hereby certify:

That I am the duly elected and acting Secretary of the GARFIELD WATER DISTRICT  
and that the foregoing Resolution was adopted on the 1st day of November, 2006.

Katherine B. Alves  
Katherine Alves, Secretary

**FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

**APPENDIX C**

**MEMORANDUM OF UNDERSTANDING**

**MEMORANDUM OF UNDERSTANDING****REGARDING****THE FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

This Memorandum of Understanding ("MOU") is entered into on this 11th day of October, 2005 by and between the FRESNO IRRIGATION DISTRICT ("District"), the CITY OF FRESNO ("Fresno"), the CITY OF CLOVIS ("Clovis"), the FRESNO METROPOLITAN FLOOD CONTROL DISTRICT ("Metropolitan"), the BAKMAN WATER COMPANY ("Company"), the CITY OF KERMAN ("Kerman"), the COUNTY OF FRESNO ("County"), the MALAGA COUNTY WATER DISTRICT ("Malaga"), and the PINEDALE COUNTY WATER DISTRICT ("Pinedale").

**RECITALS**

WHEREAS, the District adopted a regional groundwater management plan consistent with the provisions of the California Water Code Section 10750 et. seq. on August 12, 1996; and

WHEREAS, the District desires to update its groundwater management plan to make it consistent with recent amendments to the provisions of the California Water Code Section 10750 et. seq.; and

WHEREAS, other parties that are within the boundary of the District wish to enter into this Memorandum of Understanding, so that the parties may cooperate and participate in the cost-efficient development of a regional groundwater management plan for the planning and monitoring activities for groundwater conditions within their respective jurisdictions; and

WHEREAS, the District desires to incorporate the concerns and conditions of the other parties to this Memorandum of Understanding into its updated regional groundwater management plan so that the plan may provide a more comprehensive view and approach toward groundwater within the jurisdictional territory of the parties as identified, more or less, on the map included as Exhibit "1", attached hereto; and

WHEREAS, each of the parties has the authority pursuant to law and their local governing authorities to enter into this cooperative effort to study and plan for the management of groundwater conditions within their respective jurisdictions.

NOW THEREFORE, BE IT RESOLVED, in consideration of the promises contained herein the parties hereto agree upon the following covenants and conditions:

1. Purpose. This MOU is intended to promote and to provide a means to establish an orderly process to share information, develop courses of

action, and to resolve any issues with respect to the cooperative development of the regional groundwater management plan and with respect to the administration of the regional groundwater management plan. Administration will include coordination of data received from each party, public noticing, meetings and annual reporting as described herein. This MOU memorializes the interests, intent and responsibilities of the parties with respect to the adoption of a regional groundwater management plan consistent with the provisions of the California Water Code to provide for collection of data and the development of a plan for the management of groundwater resources within the jurisdictions of the parties hereto.

2. District's Responsibility. The District shall review and revise its groundwater management plan consistent with the current requirements of the California Water Code and the intentions of the parties hereto. The plan will be based upon the existing groundwater management plan of the District and shall incorporate new provisions required by recent changes in California law. The plan will be updated to include necessary revisions to incorporate the jurisdictions of the parties other than the District into the plan, so that the resulting document will satisfy the requirement of the Water Code that each of the parties has prepared a groundwater management plan. The District intends to complete the update of the regional groundwater management plan by December 2005.

3. Payment of Costs. Each of the parties hereto shall contribute to the cost of updating the groundwater management plan in accordance with the obligations specified in Exhibit "2" attached hereto. Additionally, any ongoing fees or costs incurred in the administration of the plan (as administration is defined and limited in Section 1 of this MOU) or of this Memorandum of Understanding will be shared by the parties in accordance with the percentages identified in Exhibit "2".

4. Coordination and Meetings. There shall be an annual coordination meeting between the parties. The District shall provide notice to the parties to this Memorandum of Understanding of the date and time of the meeting and submit a proposed agenda for such meeting. Each of the parties hereto agrees to provide a representative to participate in each of the annual meetings held during the effective dates of the regional groundwater management plan. The meeting may be held more often than annually if the parties hereto agree that more frequent meetings are necessary.

5. Data Provision. The parties to this agreement shall provide water quantity and water quality data for the purposes of preparing an annual report for public and state dissemination. The purpose of such data will be to evaluate the effectiveness of the implementation of the regional groundwater management plan by the parties. The parties hereto may employ consultants or contractors to assist in the preparation of the annual report which costs shall be shared according to the percentages specified in Exhibit "2". Preparation of the first annual report is estimated at 10% of the total Exhibit "2" fees to be shared at the same percentages as identified in Exhibit "2".

6. Membership. Any party to this Memorandum of Understanding may terminate their participation in the Memorandum of Understanding by providing ninety (90) days written notice to the District. Such member shall be responsible for their proportionate share of any costs incurred in administration of the Memorandum of Understanding through the effective date of their termination. Additionally, by agreement of all of the parties hereto, additional parties may be permitted to become participants in the Memorandum of Understanding and the regional groundwater management plan and will be required to pay their proportionate share of costs. Upon the termination of any member's participation or the addition of any additional member, the parties to the Memorandum of Understanding will revise the percentages for cost sharing purposes contained in Exhibit "2" appropriately. Participation in this MOU does not obligate parties to contribute to construction or implementation of groundwater related projects, unless mutually agreed upon.

7. Lead Agency. The District shall be the lead agency for contracting services associated with the development and implementation of the regional groundwater management plan. To the extent the District wishes to receive reimbursement for costs it incurs in addition to those costs identified on Exhibit "2", it shall obtain the prior written approval of each party. Promptly upon incurring approved costs, the District shall submit invoices according to the percentages contained in Exhibit "2" to each of the parties hereto for payment. The parties hereto shall remit payment of their appropriate portion of any such costs and expenses to the District within thirty (30) days of receipt of an invoice. Each party's share of contribution for preparation of the updated regional groundwater management plan as specified in Exhibit "2" shall be paid prior to the initiation of work to update the plan.

8. Budgets. The District shall prepare a proposed annual budget for consideration of the parties hereto at the annual meeting. The budget shall estimate the expenses and costs to be incurred with development of the updated regional groundwater management plan and any subsequent administration and implementation of the plan.

9. Amendments. This Memorandum of Understanding may be amended only by the express written consent of all of the parties hereto.

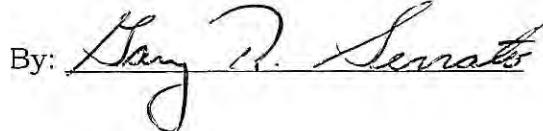
10. Severability. If any part of this agreement is found to be in conflict with applicable laws, such part shall be inoperative, null and void and so far as it is in conflict with said law that the remainder of the agreement shall remain in full force and effect.

11. Counterparts. This agreement may be executed in counterparts by the parties.

12. Governing Law and Venue. Any disputes or claims arising in connection with, or out of the implementation of this agreement shall be governed by the law of the State of California.

Executed on this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

FRESNO IRRIGATION DISTRICT

By: 

CITY OF CLOVIS

By: \_\_\_\_\_

BAKMAN WATER COMPANY

By: \_\_\_\_\_

COUNTY OF FRESNO

By: \_\_\_\_\_

CITY OF FRESNO

By: \_\_\_\_\_

APPROVED AS TO FORM:

HILDA CANTU MONTOY  
City of Fresno Attorney

By: \_\_\_\_\_  
Deputy

ATTEST

REBECCA E. KLISCH  
City of Fresno Clerk

By: \_\_\_\_\_

PINEDALE COUNTY  
WATER DISTRICT

By: \_\_\_\_\_

FRESNO METROPOLITAN  
FLOOD CONTROL DISTRICT

By: \_\_\_\_\_

CITY OF KERMAN

By: \_\_\_\_\_

MALAGA COUNTY WATER  
DISTRICT

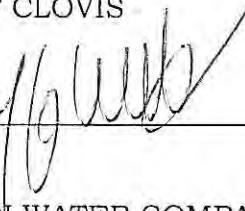
By: \_\_\_\_\_

Executed on this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

FRESNO IRRIGATION DISTRICT

By: \_\_\_\_\_

CITY OF CLOVIS

By: 

BAKMAN WATER COMPANY

By: \_\_\_\_\_

COUNTY OF FRESNO

By: \_\_\_\_\_

CITY OF FRESNO

By: \_\_\_\_\_

APPROVED AS TO FORM:

HILDA CANTU MONTOY  
City of Fresno Attorney

By: \_\_\_\_\_  
Deputy

ATTEST

REBECCA E. KLISCH  
City of Fresno Clerk

By: \_\_\_\_\_

PINEDALE COUNTY  
WATER DISTRICT

By: \_\_\_\_\_

FRESNO METROPOLITAN  
FLOOD CONTROL DISTRICT

By: \_\_\_\_\_

CITY OF KERMAN

By: \_\_\_\_\_

MALAGA COUNTY WATER  
DISTRICT

By: \_\_\_\_\_

Executed on this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

FRESNO IRRIGATION DISTRICT

By: \_\_\_\_\_

CITY OF CLOVIS

By: \_\_\_\_\_

BAKMAN WATER COMPANY

By: Walter Patten

COUNTY OF FRESNO

By: \_\_\_\_\_

CITY OF FRESNO

By: \_\_\_\_\_

APPROVED AS TO FORM:

HILDA CANTU MONTOY  
City of Fresno Attorney

By: \_\_\_\_\_  
Deputy

ATTEST

REBECCA E. KLISCH  
City of Fresno Clerk

By: \_\_\_\_\_

PINEDALE COUNTY  
WATER DISTRICT

By: \_\_\_\_\_

FRESNO METROPOLITAN  
FLOOD CONTROL DISTRICT

By: \_\_\_\_\_

CITY OF KERMAN

By: \_\_\_\_\_

MALAGA COUNTY WATER  
DISTRICT

By: \_\_\_\_\_

Executed on this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

FRESNO IRRIGATION DISTRICT

PINEDALE COUNTY  
WATER DISTRICT

By: \_\_\_\_\_

By: \_\_\_\_\_

CITY OF CLOVIS

FRESNO METROPOLITAN  
FLOOD CONTROL DISTRICT

By: \_\_\_\_\_

By: \_\_\_\_\_

BAKMAN WATER COMPANY

CITY OF KERMAN

By: \_\_\_\_\_

By: \_\_\_\_\_

COUNTY OF FRESNO

MALAGA COUNTY WATER  
DISTRICT

By: \_\_\_\_\_

By: \_\_\_\_\_

CITY OF FRESNO

By: Billieville

APPROVED AS TO FORM:

HILDA CANTU MONTØY  
City of Fresno Attorney

By: J. M. M. Deputy City Atst.

ATTEST

REBECCA E. KLISCH  
City of Fresno Clerk

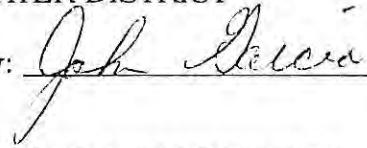
By: Elvira Sommersville  
Deputy (8/9/05)

Executed on this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

FRESNO IRRIGATION DISTRICT

By: \_\_\_\_\_

PINEDALE COUNTY  
WATER DISTRICT

By: 

CITY OF CLOVIS

By: \_\_\_\_\_

FRESNO METROPOLITAN  
FLOOD CONTROL DISTRICT

By: \_\_\_\_\_

BAKMAN WATER COMPANY

By: \_\_\_\_\_

CITY OF KERMAN

By: \_\_\_\_\_

COUNTY OF FRESNO

By: \_\_\_\_\_

MALAGA COUNTY WATER  
DISTRICT

By: \_\_\_\_\_

CITY OF FRESNO

By: \_\_\_\_\_

APPROVED AS TO FORM:

HILDA CANTU MONTOY  
City of Fresno Attorney

By: \_\_\_\_\_  
Deputy

ATTEST

REBECCA E. KLISCH  
City of Fresno Clerk

By: \_\_\_\_\_

Executed on this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

FRESNO IRRIGATION DISTRICT

PINEDALE COUNTY  
WATER DISTRICT

By: \_\_\_\_\_

By: \_\_\_\_\_

CITY OF CLOVIS

FRESNO METROPOLITAN  
FLOOD CONTROL DISTRICT

By: \_\_\_\_\_

By: Bob Van Wyk

BAKMAN WATER COMPANY

CITY OF KERMAN

By: \_\_\_\_\_

By: \_\_\_\_\_

COUNTY OF FRESNO

MALAGA COUNTY WATER  
DISTRICT

By: \_\_\_\_\_

By: \_\_\_\_\_

CITY OF FRESNO

By: \_\_\_\_\_

APPROVED AS TO FORM:

HILDA CANTU MONTOY  
City of Fresno Attorney

By: \_\_\_\_\_  
Deputy

ATTEST

REBECCA E. KLISCH  
City of Fresno Clerk

By: \_\_\_\_\_

Executed on this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

FRESNO IRRIGATION DISTRICT

By: \_\_\_\_\_

CITY OF CLOVIS

By: \_\_\_\_\_

BAKMAN WATER COMPANY

By: \_\_\_\_\_

COUNTY OF FRESNO

By: \_\_\_\_\_

CITY OF FRESNO

By: \_\_\_\_\_

APPROVED AS TO FORM:

HILDA CANTU MONTOY  
City of Fresno Attorney

By: \_\_\_\_\_  
Deputy

ATTEST

REBECCA E. KLISCH  
City of Fresno Clerk

By: \_\_\_\_\_

PINEDALE COUNTY  
WATER DISTRICT

By: \_\_\_\_\_

FRESNO METROPOLITAN  
FLOOD CONTROL DISTRICT

By: \_\_\_\_\_

CITY OF KERMAN

By: D. Mulcahy  
Attest: Edith M. Cantu  
City Clerk  
MALAGA COUNTY WATER  
DISTRICT

By: \_\_\_\_\_

Executed on this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

FRESNO IRRIGATION DISTRICT

By: \_\_\_\_\_

CITY OF CLOVIS

By: \_\_\_\_\_

BAKMAN WATER COMPANY

By: \_\_\_\_\_

COUNTY OF FRESNO

By: \_\_\_\_\_

CITY OF FRESNO

By: \_\_\_\_\_

**APPROVED AS TO FORM:**

HILDA CANTU MONTOY  
City of Fresno Attorney

By: \_\_\_\_\_  
Deputy

**ATTEST**

REBECCA E. KLISCH  
City of Fresno Clerk

By: \_\_\_\_\_

PINEDALE COUNTY  
WATER DISTRICT

By: \_\_\_\_\_

FRESNO METROPOLITAN  
FLOOD CONTROL DISTRICT

By: \_\_\_\_\_

CITY OF KERMAN

By: \_\_\_\_\_

MALAGA COUNTY WATER  
DISTRICT

By: Abolcoul \_\_\_\_\_

1 REVIEWED AND RECOMMENDED  
2 FOR APPROVAL

COUNTY OF FRESNO

3 By: Alan Weaver  
4 Alan Weaver, Director  
5 Department of Public Works and  
6 Planning

Judith G. Case  
7 Judith G. Case  
8 CHAIRMAN, Board of Supervisors

OCT 11 2005

9 APPROVED AS TO ACCOUNTING  
10 FORM

ATTEST:

11 By: Vicki Crow  
12 Vicki Crow, Auditor-  
13 Controller/Treasurer-Tax  
14 Collector

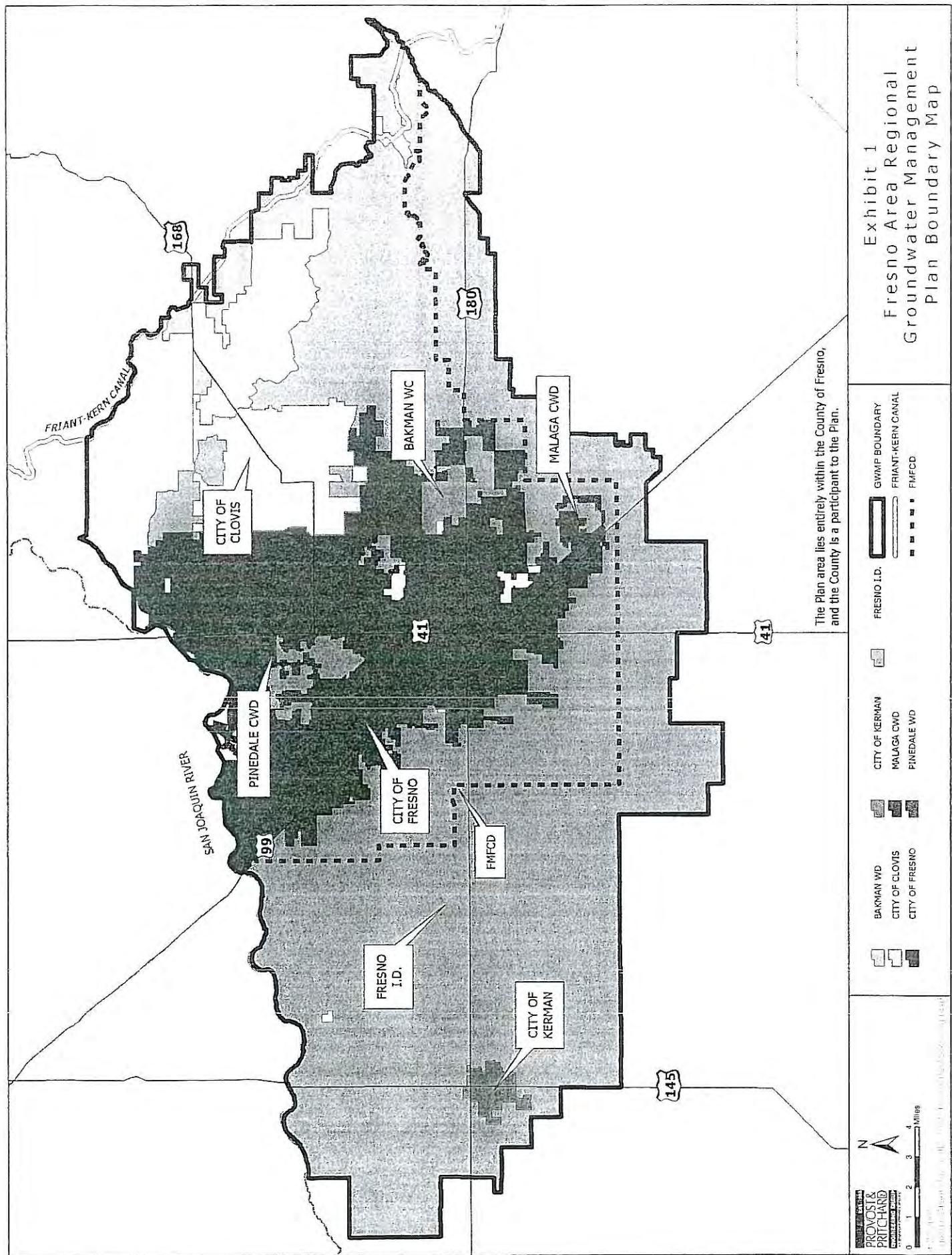
Bernice E. Seidel  
15 Bernice E. Seidel, Clerk  
16 Board of Supervisors

17 APPROVED AS TO LEGAL FORM  
18 Dennis Marshall, County Counsel

19 By: Susan F. Coblenz  
20 Deputy

21 Fund: 0001  
22 Subclass: 10000  
23 Org Number: 436000300  
24 Account: 7010  
25 Project No.:  
26  
27  
28

EXHIBIT "1"



## EXHIBIT 2

Agency	Cost Share	Percent Total
Fresno Irrigation District	\$25,000	23.81%
City of Fresno	\$30,000	28.57%
City of Clovis	\$20,000	19.05%
Fresno Metropolitan Flood Control District	\$7,500	7.14%
Bakman Water Company	\$5,000	4.76%
City of Kerman	\$5,000	4.76%
County of Fresno	\$5,000	4.76%
Malaga County Water District	\$5,000	4.76%
Pinedale County Water District	\$2,500	2.38%
<b>Total Estimated GW Mgmt. Plan Cost</b>	<b>\$105,000</b>	<b>100%<sup>1</sup></b>

<sup>1</sup>Rounded

**NOTE:** Estimate does not include agency staff time, legal fees or required newspaper notices. Estimate includes consultant work only as required to prepare the Regional Groundwater Management Plan in compliance with SB 1938.

# GARFIELD WATER DISTRICT

**Mailing Address**

P. O. Box 337  
Clovis, CA 93613  
Phone (559) 299-1120

**Office Location**

1990 Shaw, Suite A  
Clovis, CA 93613  
Fax (559) 299-3304

November 2, 2005

Mr. Dale Stanton, P.E.  
Fresno Irrigation District  
2907 So. Maple Avenue  
Fresno, CA 93725

**RE: LETTER OF INTENT TO PARTICIPATE IN THE FRESNO AREA REGIONAL GMP**

Dear Mr. Stanton:

The Garfield Water District (District) desires to cooperate and participate in the development of the Fresno Area Regional Groundwater Management Plan for the planning and monitoring activities of groundwater conditions in the area. The District hereby agrees to the terms of the Memorandum of Understanding (MOU) regarding the Fresno Area Regional Groundwater Management Plan, attached hereto. In accordance with the recommendation of the Technical advisory Committee responsible for the Plan development, the District will make an initial contribution of two thousand five hundred dollars (\$2,500.00) to assist in the preparation of the Plan. A revised cost share and percentage total described in Exhibit 2 of the MOU is attached.

The District will duly notice and conduct a public hearing for intent to participate in preparation of the Plan in accordance with California Water Code requirements. Pending comments received during the hearing, the District Board of Directors intends to adopt a resolution of intent to participate in the preparation of the Plan. Following the acceptance of this letter, completion of the public hearing and adoption of the resolution, the District will participate in Plan development and all processes involved with the Plan's anticipated adoption.

Thank you for the opportunity to participate in this Plan.

Respectfully,

GARFIELD WATER DISTRICT

President

**COPY**

Attachments

**FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN**

**APPENDIX D**  
**GLOSSARY**

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## GLOSSARY

Acre-Foot: A quantity or volume of water covering one acre to a depth of one foot; equal to 43,560 cubic feet or 325,851 gallons.

Alluvium: A stratified bed of sand, gravel, silt, and clay deposited by flowing water.

Aquifer: A geologic formation that stores and transmits water and yields significant quantities of water to wells and springs.

Confined Aquifer: A water bearing subsurface stratum that is bounded above and below by formations of impermeable, or relatively impermeable, soil or rock.

Conjunctive Operation: The operation of a groundwater basin in combination with a surface water storage and conveyance system. Water is stored in the groundwater basin for later use by intentionally recharging the basin during periods of above-average water supply.

Deep Percolation: The percolation of surface water through the ground and beyond the lower limit of the root zone of plants into a groundwater aquifer.

Ecology: The study of the interrelationships of living organisms to one another and to their surroundings.

Ecosystem: Recognizable, relatively homogeneous units, including the organisms they contain, their environment, and all the interactions among them.

Effluent: Waste water or other liquid, partially or completely treated or in its natural state, flowing from a treatment plant.

Environment: The sum of all external influences and conditions affecting the life and development of an organism or ecological community; the total social and cultural conditions.

Evapotranspiration Of Applied Water (ETAW): The portion of the total evapotranspiration which is provided by irrigation.

Groundwater: Water that occurs beneath the land surface and completely fills all pore spaces of the alluvium, soil, or rock formation in which it is situated.

Groundwater Banking: The importation and storage of a new water supply in a groundwater aquifer for subsequent extraction of a fraction thereof for use by designated beneficiaries. The fraction of the water stored (i.e. banked) in the underground that may be withdrawn is a function of the groundwater mitigation

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## GLOSSARY

required. Approval, oversight, mitigation and accounting for groundwater banking shall be the responsibility of the local agency whose AB 3030 plan governs. Agreement of the impacted local water service agencies shall also be obtained.

**Groundwater Basin:** A groundwater reservoir, defined by all the overlying land surface and the underlying aquifers that contain the water stored in the reservoir. In some cases, the boundaries of successively deeper aquifers may differ and make it difficult to define the limits of the basin.

**Groundwater Mining:** The withdrawal of water from an aquifer in excess of recharge over time. If continued, the underground supply would eventually be exhausted or the water table could drop below economically feasible pumping lifts.

**Groundwater Mitigation:** An action or activity designed to compensate for the actual or expected negative impact caused by groundwater pumping by appropriators and/or groundwater bankers. Mitigation shall include making provisions for sufficient recharge to offset the effects of all extractions, subsurface outflow and other unrecoverable losses attributable to the appropriation or banking activity. Mitigation may be incorporated into a conjunctive operation of a groundwater basin or subarea thereof with the consent of the agency or agencies responsible for the conjunctive management of such basin or subarea.

**Groundwater Overdraft:** The condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average.

**Groundwater Recharge:** Increases in groundwater storage by natural conditions or by human activity.

**Groundwater Reservoir:** An aquifer or an aquifer system in which groundwater is stored.

**Groundwater Storage Capacity:** The space or voids contained in a given volume of deposits. Under optimum conditions, the usable groundwater storage capacity is the volume of water that can, within specified economic limitations, be alternately extracted and replaced in the reservoir.

**Groundwater Table:** The upper surface of the zone of saturation (all pores of subsoil filled with water), except where the surface is formed by an impermeable body.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## GLOSSARY

Hardpan: A layer of nearly impermeable soil beneath a more permeable soil, formed by natural chemical cementing of the soil particles.

Hydrologic Balance: An accounting of all water inflow to, water outflow from, and changes in water storage within a hydrologic unit over a specified period.

Hydrologic Basin: The complete drainage area upstream from a given point on a stream.

In-Lieu Groundwater Recharge: A method of replenishing a groundwater resource by delivering an alternate surface supply to agricultural or urban users instead of pumping groundwater, thus leaving water in the underground for future use. Deliveries of surface water to parks, golf courses and freeway landscaping are examples of urban in-lieu recharge.

Intentional Recharge: The addition of surface water to a groundwater reservoir by human activity, such as putting surface water into spreading basins.

Irrecoverable Losses: The water lost to a salt sink or lost by evaporation or evapotranspiration from a conveyance facility, drainage canal, or in fringe areas.

Irrigation Efficiency: The efficiency of water application. Computed by dividing evapotranspiration of applied water by applied water and converting the result to a percentage. Efficiency can be computed at three levels: farm, district, or basin. Applied water may exclude water that percolates to groundwater for subsequent reuse.

Irrigation Return Flow: Applied water that is not transpired, evaporated, or deep percolated into a groundwater basin but that returns to a surface water supply.

Land Subsidence: The lowering of the natural land surface in response to: earth movements; lowering of fluid pressure (or lowering of groundwater level); removal of underlying supporting materials by mining or solution of solids, either artificially or from natural causes; compaction caused by wetting (hydrocompaction); oxidation of organic matter in soils; or added load on the land surface.

Leaching: The flushing of salts from the soil by the downward percolation of applied water.

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## GLOSSARY

Leaching Requirement: The incremental water necessary to prevent harmful salt accumulations in the soil.  $LR = ETAW \times LF \times DU100$  (1-LF) where LF is the leaching fraction.

Mean Annual Runoff: The average value of annual runoff amounts calculated for a selected period of record for a specified area.

Milligrams Per Liter (mg/L): The weight in milligrams of any substance dissolved in one liter of liquid. Nearly the same as parts per million.

Moisture Stress: A condition of physiological stress in a plant caused by a lack of water.

Natural Flow: The flow past a specified point on a natural stream that is unaffected by stream diversion, storage, import, export, return flow, or change in use caused by modifications in land use.

Net Water Demand: The amount of water needed in a water service area to meet all requirements. It is the sum of evapotranspiration of applied water (ETAW) in an area, the irrecoverable losses from the distribution system, and the outflow leaving the service area.

New Water Supply: A surface water supply which has not historically been imported or brought under control and put to beneficial use by recharge of the groundwater or by direct use. New water would include, but not be limited to:

- a. Fresno Stream Group water.
- b. C.V.P. Class II water not historically diverted (i.e. obligation water subject to spill from Friant Dam).
- c. Kings River flood releases from Pine Flat Dam and divertable under existing license conditions and applicable agreements.
- d. Fresno County's C.V.P. Cross Valley Supply.
- e. Any other water purchased, exchanged, developed or otherwise acquired that did not constitute a part of the historic water supply for the area in question.
- f. City of Fresno's C.V.P. Class I Supply. While this is an existing supply, it can be redirected to portions of the City outside of the District, at any time and at the City's sole discretion, and therefore has all the characteristics of new water.

Nonpoint Source: Waste water discharge other than from point sources. (See Point Source).

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## GLOSSARY

Perched Groundwater: Groundwater supported by a zone of material of low permeability located above an underlying main body of groundwater with which it is not hydrostatically connected.

Percolation: The downward movement of water through the soil or alluvium to the groundwater table.

Permeability: The capability of soil or other geologic formation to transmit water.

Point Source: A specific site from which waste or polluted water is discharged into a water body, the source of which can be identified. See also Nonpoint source.

Pollution (of water): The alteration of the physical, chemical, or biological properties of water by the introduction of any substance into water that adversely affects any beneficial use of water.

Recharge Basin: A surface facility, often a large pond, used to increase the infiltration of surface water into a groundwater basin.

Reclaimed Waste Water: Waste water that becomes suitable for a specific beneficial use as a result of treatment.

Return Flow: The portion of withdrawn water not consumed by evapotranspiration or system losses which returns to its source or to another body of water.

Reuse: The additional use of previously used water.

Riparian: of, or on the banks of, a stream or other body of water.

Riparian Vegetation: Vegetation growing on the banks of a stream or other body of water.

Runoff: The surface flow of water from an area; the total volume of surface flow during a specified time.

Safe Yield: The maximum quantity of water that can be withdrawn from a groundwater basin over a long period of time without developing a condition of overdraft. Sometimes referred to as sustained yield.

Salinity: General, the concentration of mineral salts dissolved in water. Salinity may be measured by weight (total dissolved solids), electrical conductivity, or osmotic pressure. Where sea water is known to be the major source of salt,

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## GLOSSARY

salinity is often used to refer to the concentration of chlorides in the water. See also Total Dissolved Solids.

Secondary Treatment: In waste water treatment, the biological process of reducing suspended, colloidal, and dissolved organic matter in effluent from primary treatment systems. Secondary treatment is usually carried out through the use of trickling filters or by the activated sludge process.

Seepage: The gradual movement of a fluid into, through, or from a porous medium.

Service Area: The geographical land area served by a distribution system of a water agency.

Streamflow: The rate of water flow past a specified point in a channel.

Surface Supply: Water supply from streams, lakes and reservoirs.

Tail Water: Applied irrigation water that runs off the end of a field. Tail water is not necessarily lost; it can be collected and reused on the same or adjacent fields.

Tertiary Treatment: In sewage, the additional treatment of effluent beyond that of secondary treatment to obtain a very high quality of effluent.

Total Dissolved Solids: A quantitative measure of the residual minerals dissolved in water that remain after evaporation of a solution. Usually expressed in milligrams per liter. Abbreviation: TDS. See also Salinity.

Transpiration: The process in which plant tissues give off water vapor to the atmosphere as an essential physiological process.

Waste Water: The water remaining after use, liquid waste, or drainage from a community, industry, or institution.

Water Conservation: As used in this report, water conservation is the reduction in depletion. This reduction includes the reduction of the evapotranspiration of applied water and irrecoverable losses to salt sinks.

Waste Water Reclamation: The planned reuse of waste water for specific beneficial purposes.

Water Demand Schedule: A time distribution of the demand for prescribed quantities of water for specified purposes. It is usually a monthly tabulation of

# FRESNO AREA REGIONAL GROUNDWATER MANAGEMENT PLAN

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## GLOSSARY

the total quantity of water that a particular water user intends to use during a specified year.

Water Quality: Used to describe the chemical, physical, and biological characteristics of water, usually in regard to its suitability for a particular purpose.

Water Reclamation: The treatment of water of impaired quality, including brackish water, waste water, and sea water to produce a water of suitable quality for the intended use.

Water Right: A legally protected right to take possession of water occurring in a natural water way and to divert that water for beneficial use.

Water Year: A continuous 12-month period for which hydrologic records are compiled and summarized. In California, it begins on October 1.

**Appendix I**  
**WATER SHORTAGE CONTINGENCY PLAN**

**Resolution No. 10-05**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KERMAN  
ADOPTING WATER SHORTAGE CONTINGENCY PLAN  
FOR THE CITY OF KERMAN**

WHERAS, the City of Kerman supplies water to its residents for domestic, industrial and commercial uses; and

WHERAS, California Water Code Section 375 et. seq. permits public agencies that supply water to adopt and enforce a water conservation program to reduce the quantity of water used by the people therein for the purpose of conserving the water supplies of the city; and

WHEREAS, the Council has considered the Water Shortage Contingency Plan for the City of Kerman as shown in attached Exhibit A.

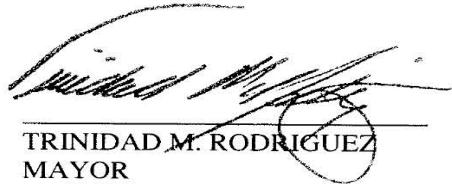
NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF KERMAN  
DOES RESOLVE AS FOLLOWS:

1. The Council adopts the Water Shortage Contingency Plan for the City of Kerman as shown in attached Exhibit A.
2. The council finds and determines that certain conditions could occur in the City to require that the water sources available be placed to maximum beneficial use to the extent to which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such water be encouraged with a view to the maximum reasonable and beneficial use thereof in the interest of the people and for the public welfare.

The foregoing resolution was introduced at a regular meeting of the City Council of the City of Kerman held on the 3<sup>rd</sup> day of February, 2010, and passed at said meeting by the following vote:

AYES: Dhaliwal, Sidhu, Jones, Rodriguez, Stockwell  
NOES: None  
ABSENT: None  
ABSTAIN: None

The foregoing resolution is hereby approved.



\_\_\_\_\_  
TRINIDAD M. RODRIGUEZ  
MAYOR

ATTEST:



\_\_\_\_\_  
L. RENEE HOLDCROFT  
CITY CLERK

# **WATER SHORTAGE CONTINGENCY PLAN FOR THE CITY OF KERMAN**

## **Section 1. Declaration of Policy.**

California Water Code Section 375 et. seq. permits public entities that supply water at retail to adopt and enforce a water conservation program to reduce the quantity of water used by the people therein for the purpose of conserving the water supplies of such public entity. The City Council of Kerman (Council) hereby establishes a water conservation program pursuant to California Water Code Sections 375 et. seq. based upon the need to conserve water supplies and to avoid or minimize the effects of future storage.

## **Section 2. Findings.**

The council finds and determines that certain conditions could occur in the City to require that the water sources available be placed to maximum beneficial use to the extent to which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such water be encouraged with a view to the maximum reasonable and beneficial use thereof in the interest of the people and for the public welfare.

## **Section 3. Application.**

The provisions of this policy shall apply to all water served to persons, customers and property by the City.

## **Section 4. Authorization.**

The Program Manager (Director of Public Works) or a designated representative is hereby authorized to implement the provisions of this policy as directed by the Council. Additionally, the Program Manager designated representative is hereby authorized to make minor and limited exceptions to prevent undue hardship or unreasonable restrictions, provided that water shall not be wasted or used unreasonably and the purpose of this policy can be accomplished.

## **Section 5. Water Conservation Stages.**

No persons shall knowingly use water or permit the use of water supplied by the City for commercial, industrial, agricultural, governmental or any other purpose in a manner contrary to the provisions of this policy. At no time shall water be wasted or used unreasonably.

The following stages shall take effect upon declaration as herein provided:

### **a) Stage 1 - Enforcement Required – Minor Shortage Potential**

Stage 1 applies during periods that the City determines that water usage should be reduced approximately 10%-20% in order to meet all of the water demands of its customers, either now or in the foreseeable future. Implementation of Stage 1 should result in a minimum of 10% reduction in water use from a base period to be determined at the time of declaration.

**b) Stage 2 – Enforcement Required – Moderate Shortage Potential**

Stage 2 applies during periods when the City determines that water usage should be reduced by approximately 20%-35% in order to meet all of the water demands of its customers now or in the foreseeable future, Implementation of Stage 2 should result in a minimum of 20% reduction in water used from a base period to be determined at the time of declaration.

**c) Stage 3 – Enforcement Required – Critical Shortage Potential**

Stage 3 applies during periods when the City determines that water usage should be reduced by approximately 35%-50% in order to meet all of the water demands of its customers now or in the foreseeable future, Implementation of Stage 3 should result in a minimum of 35% reduction in water used from a base period to be determined at the time of declaration.

Specific mandated restrictions in water use for Stages 1, 2, and 3 shall be determined by the Council and may include, but not be limited to:

- 1) Landscape (except residential) – Eliminate watering of ornamental turf areas. Water only actively used turf areas no more than twice per week. Trees and shrubs may be watered only twice per week using a hand-held hose with a positive shutoff nozzle or drip irrigation systems. Use of reclaimed water, however, is exempt.
- 2) Household and household members (residential landscapes) – Water no more than twice per week using only a hand-held hose with positive shutoff nozzle or drip irrigation systems. Eliminate sprinkler use.
- 3) Construction Usage – All construction water must be reclaimed or no potable. Issuance of construction meters will be only for testing and disinfection of potable water lines.
- 4) Development Construction – Prior to the issuance of any building permit, the developer will be required to certify that a reduction (20% for Stage 1, 35% for Stage 2, and 50% for Stage 3) of the projected water usage for that development shall be achieved.

**Section 6. Implementation of Conservation Stages.**

The City shall monitor the projected supply and demand for water by its customers on a daily basis. The Program Manager shall recommend to the Council the extent of the conservation required through implementation and/or termination of particular conservation stages in order for the City to prudently plan for and supply water to its customers. Thereafter, the Council may order that the appropriate stage of water conservation be implanted or terminated in accordance with the applicable provisions of this policy. The declaration of any stage shall be done by mass mailing, and a public announcement and notice shall be published a minimum of three (3) consecutive

times in a newspaper of general circulation. The stage designated shall become effective immediately upon announcement.

#### Section 7. Violations, Notices, Penalties.

The violations of any provisions in this policy are subject to the penalties specified in the Kerman Municipal Code.

**Appendix J**  
**WATER WASTING VIOLATIONS FROM CITY OF KERMAN**  
**MUNICIPAL CODE**

## From the City of Kerman Municipal Code

### **13.04.160 Water wasting violations.**

- A. In the use of water supplied by the city, no person shall do or permit any of the following:
  - 1. Use of water through a hose, pipe or other discharge for the purpose of watering gardens, trees, lawns, flowers, or other plants or other irrigation purposes without the use of a restricting nozzle or sprinkling device or unless such use is manually controlled and attended; or
  - 2. Keep, maintain, operate or use any water connection, hose, faucet, hydrant, pipe, outlet or plumbing fixture which is not tight and free from leakage; or
  - 3. Willfully or negligently waste water; or
  - 4. Allow any water supplied by the city to flow from the premises of the use onto other premises or onto the public streets or thoroughfares in excessive or unusual amount; or
  - 5. Flood any part of the user's premises or the premises of another; or
  - 6. Sprinkle or irrigate any yard, ground, premises or vegetation unless the watering device used is controlled by an automatic shutoff device or a person is in immediate attendance of the hose or water device.
- B. Other outside use of water. Outside use of water for purposes other than irrigation is allowable during any hour of the day and within the following guidelines:
  - 1. Washing the house windows and vehicles is permissible if a water flow control device is attached to the end of the hose and water does not waste excessively onto the street or adjacent property;
  - 2. Nonprofit organizations may conduct car wash fundraisers under the same guidelines;
  - 3. Washing down of exterior walls of buildings is permissible only for cleaning purposes in preparation for painting, stucco or other maintenance;
  - 4. Portable wading pools are allowed with adult supervision and no waste or water;
  - 5. No continuous flow of water is permissible for recreation activity;
  - 6. Businesses which sell ready-to-eat foods, drinks or automotive fuels may use water for health and sanitary cleanup purposes only when mopping is inadequate;
  - 7. Wash down of driveways, parking lots, walks or paved areas at businesses or residences is prohibited during April through October;
  - 8. Wash down of street and gutters is prohibited year-round.
  - 9. Swimming pools may occasionally be emptied for maintenance which cannot be accomplished when full of water. A pool may not be emptied and refilled more than twice between May 1 and September 30; more frequent refilling will be a violation and subject to the same citations or surcharges in effect for other water waste. Pools must be equipped with filtration systems in good working order.
- C. Other water and energy conservation measures (such as: hours and days for watering of lawns and landscaping; restrictions on time of day for washing of automobiles including but not limited to, home and commercial car washes; or restrictions on industrial water usage) may be imposed in time of extreme emergency, shortage or demand, as set forth from time to time by resolution of the city council of the city of Kerman.
- D. Violations of this section shall be termed "water wasting violations". Any person violating this section shall be issued a warning citation. Any person receiving three warning citations within twelve consecutive calendar months will be required by a resolution and an order of the director of public works to install a water meter on the premises for which city water is requested, at violator's expense, as a condition precedent to continued water service. Where a

water meter already exists upon the premises, any person receiving a third citation within twelve consecutive calendar months shall be subjected to a fine in the amount of thirty dollars for the third violation and for each additional violation. The amount of any fine shall be added to and collected with the utility charges applicable to the property. (Ord. 01-01 § 1 (part), 2001)

**Appendix K**  
**RESOLUTION APPROVING OUTDOOR WATERING SCHEDULE**

**RESOLUTION NO. 16-58**

**RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KERMAN APPROVING MUNICIPAL  
UTILITY GUIDELINES RELATING TO OUTDOOR WATER SCHEDULE  
DURING LESS SEVERE DROUGHT CONDITIONS**

WHEREAS, on April 25, 2014 the Governor signed an Executive Order calling on the State to redouble state drought actions; and

WHEREAS, on July 15, 2014 the State Water Board approved an emergency regulation intended to reduce outdoor urban water use that mandates minimum actions to conserve water supplies both for this year and into 2015; and

WHEREAS, recognizing persistent yet less severe drought conditions throughout California, on May 18, 2016, the State Water Board adopted an emergency water conservation regulation that replaces the February 2nd emergency regulation. The May 2016 regulation that will be in effect from June 2016 through January 2017 requires locally developed conservation standards based upon each agency's specific circumstances. It replaces the prior percentage reduction-based water conservation standard with a localized "stress test" approach. These standards require local water agencies to ensure a three-year supply assuming three more dry years like the ones the state experienced from 2012 to 2015. Water agencies that would face shortages under three additional dry years will be required to meet a conservation standard equal to the amount of shortage.

WHEREAS, directed by Governor Edmund G. Brown Jr. in Executive Order B-37-16, the Board will separately take action to make some of the requirements of the regulation permanent.

WHEREAS, the Department of Water Resources approved the City of Kerman's self-certification conservation standard as zero compared to 2013.

WHEREAS, pursuant to City ordinances, the City Council may establish by resolution, formal guidelines for the conservation of all resources provided by the City's Municipal Utility Division.

THEREFORE, BE IT RESOLVED that the City Council of the City of Kerman approves implementation of the following regulations, and as summarized on the Outdoor Watering Schedule, attached hereto as Exhibit 'A'.

**SECTION A.**

1. For the purposes of these guidelines, "outdoor watering purposes" or "outside watering" shall mean the use of water from the City's utilities for irrigation, washing motor vehicles, sidewalks or parking lots, or recreational use, but shall not include the conservative use of water in preparation for painting, stuccoing or similar exterior maintenance or the use of less than 25 gallons of water for a child's wading pool.

2. During the Spring/Summer/Fall Schedule, in effect from March 2nd to November 30<sup>th</sup>, residents or occupants with street addresses ending in an odd number shall be permitted to use water for outdoor watering purposes, on **Tuesdays, Thursdays, and Saturdays**. Residents or occupants with street addresses ending in an even number shall be permitted to use water for outdoor watering purposes on **Wednesdays, Fridays, and Sundays**.

There shall be **no watering on Mondays**. For purposes of this regulation, the address of a property located on a corner shall be its mailing address. Water from the City Utility System shall not be used for outdoor watering purposes from 6:00 am to 8:00 a.m. or from 12:00 p.m. (Noon) to 7:00 p.m. on any day.

3. During the Winter Watering Schedule will be in effect from December 1<sup>st</sup> to March 1<sup>st</sup>, Residents or occupants with odd number addresses will water on **Tuesdays and Saturdays** only. Residents or occupants with even Numbered addresses will water on **Wednesdays and Sundays** only. When the Winter Watering Schedule is in effect, watering can be done any time of the day.
4. All city medians and parks that have no physical address assigned shall be watered according to the following schedule:
  - (a) Madera Avenue and areas to the east of Madera Avenue will be watered as Even Numbered addresses
  - (b) All areas west of Madera Avenue will be watered as Odd Numbered addresses.
5. The following actions are prohibited:
  - (a) The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;
  - (b) The use of a hose that dispenses potable water to wash an automobile, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;
  - (c) The application of potable water to driveways, sidewalks, and asphalt; and
  - (d) The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.
6. The taking of any action prohibited in section 5 of this Resolution is an infraction, punishable by a fine of up to five hundred dollars (\$500) for each day in which the violation occurs. Wasteful use of water or watering on days or times not permitted will subject the person responsible for said use to a fine /infraction up to \$500 per day, or other actions as provided in Paragraph D. of Section 13.04.160 of the Kerman Municipal Code.

7. This resolution and the foregoing regulations are adopted pursuant to Paragraph C. of Section 13.04.060 of the Kerman Municipal Ordinance, and the regulations shall supersede any less restrictive provisions of Section 13.04.060 until such time as this Resolution is rescinded or repealed by action of the City Council.
8. The regulations adopted herein shall be construed so as to comply with and give effect to Drought Emergency Water Conservation regulations adopted by the California Water Resources Control Board and added as Sections 863, 864 and 865 of Title 23 of the California Code of Regulations. City staff is directed to develop and implement procedures that will encourage the conservation of the City's potable water resources through the use of utility user education, warnings concerning the use of water conservation practices, and as a last resort, the use of citations or other enforcement mechanisms. As soon as reasonably possible, Staff shall provide each utility customer with a copy of Exhibit 'A'.

SECTION B. These regulations shall be effective from and after September 7, 2016.

SECTION C. The foregoing resolution supersedes any prior resolution, ordinance or other regulation or policy concerning the times and days for outdoor watering.

This resolution was approved by the City Council of the City of Kerman at a regular meeting held on the 7th day of September, 2016 and passed at the said meeting by the following vote;

AYES:           Nehring, Armstrong, Nijjer, Hill  
NOES:           None  
ABSENT:        Yep  
ABSTAIN:       None

The foregoing resolution is hereby approved.

ATTEST:

  
\_\_\_\_\_  
Marci Reyes  
City Clerk

  
\_\_\_\_\_  
Stephen Hill  
Mayor

Exhibit 'A'

City of Kerman  
Outdoor Watering Schedule

*(Irrigation, Vehicle Washing, Recreation Use)*

**Spring/Summer Watering Schedule**  
Effective March 2 – November 30

**Odd Number Addresses (Ending in 1, 3, 5, 7, 9):**  
**Tuesday, Thursday, and Saturday**

**Even Number Addresses (Ending in 0, 2, 4, 6, 8):**  
**Wednesday, Friday, and Sunday**

Watering Times: Midnight to 6 AM, 8 AM to Noon, and 7 PM to Midnight

**NO WATERING ON MONDAY**  
or between the hours of  
**6 AM to 8 AM and Noon to 7 PM any day.**

All city medians and parks that are not addressed will be split down  
Madera Ave as follows:

- (A) Madera Avenue and areas to the east of Madera Avenue  
will be considered **Even Number addresses**
- (B) All areas west of Madera Avenue will be considered  
**Odd Number addresses**



**Winter Watering Schedule**  
Effective Dec. 1 – March 1  
**Odd** Numbered Addresses:  
(Ending in 1, 3, 5, 7, 9)  
**Tuesdays and Saturdays**

**Even** Numbered Addresses:  
(Ending in 0, 2, 4, 6, 8)  
**Wednesdays and Sundays**  
(Water any time on your day)

**Appendix L**  
**MODEL WATER EFFICIENT LANDSCAPE ORDINANCE**

**ORDINANCE NO. 16-05**

**AN ORDINANCE OF THE CITY OF KERMAN REPEALING CHAPTER 13.06  
OF TITLE 13 OF THE KERMAN MUNICIPAL CODE AND ADDING NEW CHAPTER  
13.06 TO TITLE '13 OF THE KERMAN MUNICIPAL CODE ADOPTING BY  
REFERENCE THE STATE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE**

**THE CITY COUNCIL OF THE CITY OF KERMAN DOES ORDAIN AS FOLLOWS:**

SECTION 1. Chapter 13.06 of Title 13 of the Kerman Municipal Code comprised of Sections 13.06.010 through 13.06.494 is hereby repealed.

SECTION 2. Chapter 13.06 of Title 13 of the Kerman Municipal Code is added to read as follows:

***CHAPTER 13.06***  
***MODEL WATER EFFICIENT LANDSCAPE ORDINANCE***

Sections:

13.06.010	Purpose and Intent.
13.06.020	Adoption of State Model Water Efficient Landscape Ordinance.
13.06.030	Local Agency Defined.
13.06.040	Local Purveyor Defined.

**Section 13.06.010 Purpose and Intent.**

The purpose of this Chapter is to adopt by reference the State Model Water Efficient Landscape Ordinance as required by state law.

**Section 13.06.020 Adoption of State Model Water Efficient Landscape Ordinance.**

Except as hereafter provided, the City hereby adopts the Model Water Efficient Landscape Ordinance of the State of California by reference as set forth in Sections 49-495, Chapter 2.7, Division 2, of Title 23 of the California Code of Regulations, as amended. A copy of the Model Water Efficient Landscape Ordinance of the State of California shall be maintained in the Building Department and City Clerk's Office and shall be made available for public inspection while this ordinance is in force.

**Section 13.06.030 Local Agency Defined.**

The term "local agency" in the Water Efficient Landscape Ordinance shall mean the City of Kerman.

### **Section 13.06.040 Local Water Purveyor Defined.**

The term "local water purveyor" in the Water Efficient Landscape Ordinance shall mean the City of Kerman.

**SECTION 3. CEQA.** This Ordinance is categorically exempt under CEQA Guidelines for Implementation of the California Environmental Quality Act, Section 15307, Actions by Regulatory Agencies for Protection of Natural Resources, Class 7 Exemption.

**SECTION 4. Severance.** If any section, subsection, phrase, or clause of this ordinance is for any reason held to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of this Ordinance.

**SECTION 5. Publication.** Upon passage, this ordinance or a summary of the same shall be published within fifteen (15) days of passage pursuant to the laws of the State of California in the Kerman News, a newspaper of general circulation published and circulated in said City of Kerman.

**SECTION 6. Effective Date.** This ordinance shall become effective thirty (30) days after its adoption.

The foregoing ordinance was introduced at a regular meeting of the City Council of the City of Kerman held on 6<sup>th</sup> day of July 2016, and was passed and adopted at a noticed public hearing of the City Council held on 20<sup>th</sup> day of July, 2016, by the following vote:

AYES: Armstrong, Nehring, Nijjer, Hill

NOES: None

ABSENT: Yep

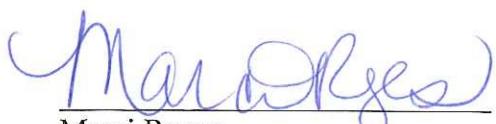
ABSTAIN: None

The foregoing ordinance is hereby approved.



Stephen B. Hill  
Mayor

ATTEST:



Marci Reyes  
City Clerk

**Appendix M**  
**RESOLUTION APPROVING FY 2016-17 RATE INCREASE**

**RESOLUTION NO. 16-24**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KERMAN  
ADOPTING WATER, SEWER, SOLID WASTE, STREET SWEEPING, AND STORM DRAIN RATES  
("UTILITY RATES") COMMENCING JULY 1, 2016, AND RATIFYING PROPOSITION 218 PROCESS**

WHEREAS, City staff and the City Council have analyzed the revenue and expenditure requirements for all of the City Enterprise Funds to determine the appropriate rate changes needed to meet these requirements; and

WHEREAS, utility rates for Fiscal Year 2016/2017 are proposed as listed in the Utility Rate schedule attached as Exhibit 'A'; and

WHEREAS, City staff prepared and mailed a notice of public hearing to all property owners served by the City, as required by Proposition 218 (Cal. Const. Art. XIIID, § 6); and

WHEREAS, the notice of public hearing instructed customers and property owners on how and where to protest the proposed increase in water, sewer, solid waste, street sweeping, and storm drain ("Utilities") service rates and the notice was developed in accordance with Proposition 218; and

WHEREAS, the notice of public hearing on the proposed increase of rates was published in a local newspaper, in a separate mailing to all Kerman Utilities' customers and property owners and inserted in the monthly utility billing, with the newspaper publication and the separate mailing occurring at least 45 days prior to the public hearing; and

WHEREAS, the adoption of the proposed rate increases for Utilities is exempt from California Environmental Quality Act (CEQA) under California Public Resources Code Section 21080(b)(8); and

WHEREAS, the Council held a public hearing on June 1, 2016, and considered all protests regarding the increased Utility rates.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Kerman that based upon the foregoing recitals and information and testimony presented at the hearing of June 1, 2016, including all the attachments to the Report to the Council, the Council hereby resolves as follows:

- Section 1. Finds that insufficient written protests were presented to prevent the proposed increased rates to Utilities from being adopted; and
- Section 2. Finds the utility service charges are supported by the analysis of revenues and expenditures requirements conducted by staff; and
- Section 3. Finds the adoption of the proposed utility service charges is exempt from CEQA under California Public Resources Code § 21080(b)(8); and
- Section 4. Ratifies the Proposition 218 process followed by the City; and
- Section 5. Adopts the rates for Utilities as listed in Exhibit 'A' attached hereto and incorporated by reference effective July 1, 2016.
- Section 6. This Resolution shall become effective upon adoption.

The foregoing resolution was introduced at a regular meeting of the City Council of the City of Kerman held on the 1<sup>st</sup> day of June 2016, and passed at said meeting by the following vote:

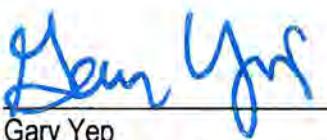
AYES: Armstrong, Nehring, Nijjer, Yep

NOES: None

ABSENT: Hill

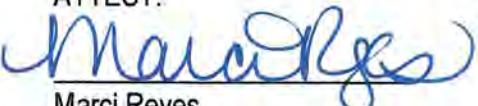
ABSTAIN: None

The foregoing resolution is hereby approved.



Gary Yep  
Mayor Pro Tem

ATTEST:



Marci Reyes  
City Clerk

Attachment 'A'

**UTILITY RATE CHANGES - FISCAL YEAR 2016-17**

**Effective July 1, 2016**

<b>WATER RATES</b>	<b>Current Rate</b>	<b>Proposed Increase</b>	<b>Proposed Base Cost</b>	<b>Total</b>	<b>Flow Cost</b>	<b>Total Cost</b>
Residential (Non-metered)	29.53	0.75	30.28	+	\$0.00	30.28
Multi-Family (Non-Metered) per unit	23.98	0.75	24.73	+	\$0.00	24.73
Commercial (Non-Metered)	29.53	0.75	30.28	+	\$0.00	30.28
Residential & Multi-Family (3/4" Meter)	14.42	0.75	15.17	+	Usage	
Residential & Multi-Family (1" Meter)	22.04	0.75	22.79	+	Usage	
Commercial (Metered-Rate Determined by Meter Size)						
3/4" Meter	14.42	0.75	15.17	+	Usage	
1" Meter	22.04	0.75	22.79	+	Usage	Examples Below
1.5" Meter	41.05	0.75	41.80	+	Usage	
2" Meter	94.32	0.75	95.07	+	Usage	
3" Meter	174.24	0.75	174.99	+	Usage	
4" Meter	288.40	0.75	289.15	+	Usage	
6" Meter	573.79	0.75	574.54	+	Usage	
Water Cost per 1,000 Gallons	\$ 0.81	0.02	\$0.83			
<b>WATER USE EXAMPLES</b>				<b>Base Cost</b>	<b>Flow Cost</b>	<b>Total Cost</b>
	16,000 gallons of usage			15.17	+	\$13.28 = \$28.45
	24,000 gallons of usage			15.17	+	\$19.92 = \$35.09
<b>SEWER RATES</b>	<b>Current Rate (Base + Flow)</b>	<b>Proposed Increase</b>	<b>Base Cost</b>	<b>Flow Cost</b>	<b>Total Cost</b>	
Residential (Metered/Non-metered)	30.86	0.75	9.20	+	22.41	= 31.61
Multi-Family Residential (Metered/Non-Metered) per unit	19.14	0.75	2.69	+	17.20	= 19.89
Commercial (Non-Metered)	30.86	0.75	9.20	+	22.41	= 31.61
Commercial (Metered)	8.45	0.75	9.20	+	Usage	
Low Strength					\$1.10*	
Medium Strength					\$1.43*	
High Strength					\$2.74*	
*Cost per 1,000 Gallons of Water Usage						
<b>SOLID WASTE</b>			<b>Current Rate</b>	<b>Proposed Increase</b>	<b>Total Cost</b>	
Residential Customers			16.03	0.09	16.12	
Commercial Customers					1% Increase	
<b>STREET SWEEPING</b>			<b>Current Rate</b>	<b>Proposed Increase</b>	<b>Total Cost</b>	
Residential			0.95	0.05	1.00	
Multi-Family Residential per unit			0.52	0.05	0.57	
<b>STORM DRAIN</b>			<b>Current Rate</b>	<b>Proposed Increase</b>	<b>Total Cost</b>	
Residential (Metered/Non-metered)			1.55	0.05	1.60	
Commercial (Non-Metered)			1.55	0.05	1.60	
Commercial (Metered) - Based on Flow @ .0736 per 1,000 Gallons of Water Usage						
<b>RECAP</b>	<b>Current Rate</b>	<b>Proposed Increase</b>	<b>Total Cost</b>	<b>% Increase</b>		
Non-Metered Customers	78.92	1.69	80.61	2.15%		
Metered Customers Estimated @ 16,000 gallons of usage with 3/4" meter	76.77	2.01	78.78	2.62%		

**Appendix L**  
**NOTICE OF PUBLIC HEARING**  
**(not included in this Draft Version)**

**Appendix O**  
**ADOPTING RESOLUTION**  
**(not included in this Draft Version)**

**Appendix P**  
**UWMP COMPLETION CHECKLIST**

## Checklist Arranged by Subject

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.1	Sec. 2.2, Page 5
10620(d)(2)	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.	Plan Preparation	Section 2.5.2	Sec. 2.5.2, Page 9
10642	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.	Plan Preparation	Section 2.5.2	Appendix C
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	Sec. 3.1 Page 11
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	Ch. 3 Page 11-14
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	Sec. 3.4 Page 13-14
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	Ch. 3 Page 11-14
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	Sec. 3.4 Table 3-3 & Sec. 5.4 Table 5-1
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	Sec. 4.3. Tables 4-1, 4-3 & 4-4
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	Sec. 4.4. Table 4-5
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	Sec. 4.6. Table 4-7

<b>10608.20(b)</b>	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	Sec. 5.7.1. Page 31 & Appendix F
<b>10608.20(e)</b>	Retail suppliers shall 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.	Baselines and Targets	Chapter 5 and App E	Ch. 5 & Appendix F
<b>10608.22</b>	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	Sec. 7.7.2. Table 5-5 & Appendix F
<b>10608.24(a)</b>	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	Sec. 5.7.3. Table 5-6 & Appendix F
<b>1608.24(d)(2)</b>	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	Section 5.8.2
<b>10608.36</b>	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	N/A
<b>10608.40</b>	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	Sec. 5.8. Table 5-8 & Appendix F
<b>10631(b)</b>	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	Ch. 6 Pages 34-53
<b>10631(b)</b>	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	Sec. 6.2. Page 34-41
<b>10631(b)(1)</b>	Indicate whether a groundwater management plan has 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.	System Supplies	Section 6.2.2	Sec. 6.2.3. Pages 37-39

<b>10631(b)(2)</b>	Describe the groundwater basin.	System Supplies	Section 6.2.1	Sec. 6.2.2. Page 35-36
<b>10631(b)(2)</b>	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2	Sec. 6.2.2. Page 36-37
<b>10631(b)(2)</b>	For adjudicated basins, indicate whether or not the department has identified the basin as over drafted, or projected to become over drafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.	System Supplies	Section 6.2.3	Section 6.2.4. Page 39-40
<b>10631(b)(3)</b>	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	System Supplies	Section 6.2.4	Sec. 6.2.5. Page 40
<b>10631(b)(4)</b>	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	Sec. 6.2. & 6.9. Table 6-8
<b>10631(d)</b>	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	Sec. 6.7. Page 49
<b>10631(g)</b>	Describe the expected future 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.	System Supplies	Section 6.8	Sec. 6.8. Page 49
<b>10631(i)</b>	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	Sec. 6.6. Page 49
<b>10631(j)</b>	Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source.	System Supplies	Section 2.5.1	Section 2.5.1 Table 2-4
<b>10631(j)</b>	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	N/A

<b>10633</b>	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	Sec. 6.5.1. Page 41
<b>10633(a)</b>	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	Sec. 6.5.2. Pages 41-44
<b>10633(b)</b>	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.	System Supplies (Recycled Water)	Section 6.5.2.2	Sec. 6.5.2. Pages 41-44
<b>10633(c)</b>	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	Sec. 6.5.3. Table 6-5
<b>10633(d)</b>	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	Sec. 6.5.4. Table 6-5
<b>10633(e)</b>	Describe 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.	System Supplies (Recycled Water)	Section 6.5.4	Sec. 6.5.4. Table 6-5
<b>10633(f)</b>	Describe the actions 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.	System Supplies (Recycled Water)	Section 6.5.5	Sec. 6.5.5. Page 48
<b>10633(g)</b>	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	Sec. 6.5.5. Page 48
<b>10620(f)</b>	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.4	Sec. 7.4. Pages 57-59
<b>10631(c)(1)</b>	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	Sec. 7.2. Pages 54-56

<b>10631(c)(1)</b>	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	Sec. 7.3. Pages 56-57
<b>10631(c)(2)</b>	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	Sec. 7.2. Pages 54-56
<b>10634</b>	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1	Sec. 7.2.1. Page 54-55
<b>10635(a)</b>	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.	Water Supply Reliability Assessment	Section 7.3	Sec. 7.4. & 7.5 Pages 57-59
<b>10632(a) and 10632(a)(1)</b>	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	Sec. 8.2. Page 61-63
<b>10632(a)(2)</b>	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.	Water Shortage Contingency Planning	Section 8.9	Sec. 8.10. Table 8-5
<b>10632(a)(3)</b>	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	Sec. 8.9. Pages 70-71
<b>10632(a)(4)</b>	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	Sec. 8.3. Table 8-2
<b>10632(a)(5)</b>	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	Sec. 8.5. Table 8-3
<b>10632(a)(6)</b>	Indicate penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	Sec. 8.4. Page 67
<b>10632(a)(7)</b>	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	Sec. 8.7. Page 70

<b>10632(a)(8)</b>	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	Sec. 8.8. & Appendix H
<b>10632(a)(9)</b>	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	Sec. 8.6. Page 69
<b>10631(f)(1)</b>	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3	Sec. 9.3. Pages 77-78
<b>10631(f)(2)</b>	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Sections 9.1 and 9.3	N/A
<b>10631(j)</b>	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	N/A
<b>10608.26(a)</b>	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	Sec. 10.3. Page 81
<b>10621(b)</b>	Notify, at least 60 days prior to the public hearing, 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.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	Sec. 10.2.1. Page 80
<b>10621(d)</b>	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	Sec. 10.4. Page 82
<b>10635(b)</b>	Provide supporting documentation that Water Shortage Contingency 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 the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	Sec. 10.4. Pages 82

<b>10642</b>	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	Sec. 10.2.2., 10.3., & 10.5. & Appendix J
<b>10642</b>	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2.1	Sec. 10.2.1. Page 80
<b>10642</b>	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	Sec. 10.3.1. Pages 84-85 & Appendix K
<b>10644(a)</b>	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	Sec. 10.4.2. Page 82
<b>10644(a)(1)</b>	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	Sec. 10.4.3. Page 82
<b>10644(a)(2)</b>	The plan or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	Sec. 10.4.1. Page 82
<b>10645</b>	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5	Sec. 10.5. Pages 83