ELK GROVE WATER DISTRICT

A DEPARTMENT OF THE
FLORIN RESOURCE CONSERVATION DISTRICT

2010 URBAN WATER MANAGEMENT PLAN

June 22, 2011

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A Urban Water Management Plan Act

B Agency Coordination Letters

C Notice of Public Hearing for 2010 Urban Water Management Plan

D Resolution Adopting 2010 Urban Water Management Plan

E Elk Grove Water District Service Area Map

F City of Elk Grove General Plan Land Use Exhibit

G DWR Bulletin 118-Update 2003

H Central Sacramento County Groundwater Management Plan (CD)

I Central Groundwater Basin Historic Groundwater Elevations Exhibit

J Ordinance 04-28-10-01 Water Shortage Contingency Plan

K Ordinance 06-22-11-01 Prescribing Rates for Water Service

Acronyms

AF	Acre-Feet
AFY	Acre-Feet per Year
CDPH	California Department of Public Health
CII	Commercial, Industrial, and Institutional
CIP	Capital Improvement Program
CSCGMP	Central Sacramento County Groundwater Master Plan
CUWCC	California Urban Water Conservation Council
DMM	Demand Management Measure
DWR	Department of Water Resources
EGWD	Elk Grove Water District
EGCSD	Elk Grove Community Services District
ET_0	Evapotranspiration Rate
FRCD	Florin Resource Conservation District
FRWA	Freeport Regional Water Authority
GIS	Geographic Information System
GMP	Groundwater Master Plan
GPD	Gallons per day
GPCD	Gallons per Capita Day
HECW	High-Efficiency Clothes Washers
I.C.E.	Irrigation Consultation and Evaluation
MIE	Media in Education
PSA	Public Services Announcement
RWA	Regional Water Authority
RWEP	Regional Water Enhancement Program
SACOG	Sacramento Area Council of Governments
SCWA	Sacramento County Water Agency
SGA	Sacramento Groundwater Authority
SRCSD	Sacramento Regional County Sanitation District
SRWTP	Sacramento Regional Wastewater Treatment Plant
ULFT	Ultra Low-Flush Toilet
UWMP	Urban Water Management Plan
WET	Water Education for Teachers
WROS	Water Recycling Opportunities Study
WRP	Water Recycling Program

Executive Summary

The Urban Water Management Act (Act) became part of the California Water Code during the 1983-1984 regular session of the California Legislature. The California Water Code requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers (water connections) or supplying more than 3,000 acre-feet of water annually to adopt and submit an Urban Water Management Plan every five years to the California Department of Water Resources. Water Suppliers are to prepare or update Urban Water Management Plans in years that end in 0 and 5.

The Elk Grove Water District (EGWD), a department of the Florin Resource Conservation District, had approximately 12,100 water connections in 2010 and, as such, is required to submit an updated Urban Water Management Plan. The EGWD serves a population in excess of 35,000 residents.

The EGWD service covers a triangular shaped area of approximately 13 square miles and is generally bounded as follows: to the north by Sheldon Road, to the east by Grant Line Road, to the south by Union Industrial Park, and to the west by State Route 99. The service area is separated into two distinct subareas. These areas are referenced as Tariff Area No. 1 and Tariff Area No. 2. In general, Tariff Area No. 1 is served by the pumping of groundwater wells owned by the EGWD, and Tariff Area No. 2 is service by purchased water from the Sacramento County Water Agency.

This 2010 Urban Water Management Plan presents an analysis of EGWD's water supply sources and water demands to determine water reliability through 2035. There is expected to be sufficient water supplies to meet future demands.

In accordance with the Act and subsequent amendments, the required components of the 2010 Urban Water Management Plan include:

- A description of the water service area.
- A description of the existing and planned surface and groundwater sources available.
- Estimates of past, present, and projected water use.
- A description of opportunities for water transfers or exchanges.

- A description of the water conservation Demand Management Measures already in place, planned to be implemented, or not being pursued.
- A description of the Water Shortage Contingency Plan.
- Opportunities to utilize recycled water to reduce water demands.

The UWMP also includes a discussion of how the EGWD plans to meet requirements to reduce average per capita water usage by 20% by 2020.

Section 1 – Plan Preparation

1.1 Urban Water Management Planning Act

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

In an effort to enable local districts to comply with the Act and cover all required topics in a clear and concise manner, DWR has issued the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" (Guidebook). The Guidebook includes section outlines, templates, and guidance in developing a UWMP. This UWMP has been prepared consistent with the Guidebook outline.

In accordance with the Act and subsequent amendments, the required components of the 2010 UWMP include:

- A description of the water service area.
- A description of the existing and planned surface and groundwater sources available.
- Estimates of past, present, and projected water use.
- A description of opportunities for water transfers or exchanges.
- A description of the water conservation Demand Management Measure already in place and planned to be implemented, including a discussion of how Elk Grove Water District plans to meet requirements to reduce average per capita water usage by 20% by 2020.
- A description of the Water Shortage Contingency Plan.
- Opportunities to use recycled water to reduce water demands.

This UWMP is divided into 8 sections. The sections include:

Section 1 is an introduction to the Urban Water Management Act requirements and describes the plan preparation and adoption.

Section 2 provides the background and description of the Elk Grove Water District (EGWD) service area and system, including population projections.

Section 3 describes water system baseline demands and targets along with future demand projections.

Section 4 discusses water system supplies.

Section 5 describes water supply reliability planning and water shortage contingency planning.

Section 6 discusses the suite of available demand management measures (DMM) and whether they are being, or planned to be, implemented by EGWD.

Section 7 is an optional section that could be used to discuss global warming impacts. It is not addressed in this UWMP, but is included to maintain consistency with the Guidebook.

Section 8 contains the UWMP completeness checklist.

1.2 Agency Coordination

The EGWD coordinated with the appropriate public agencies in developing the 2010 UWMP, to provide the opportunity for these agencies to participate during its preparation. Presented on **Table 1** are the agencies that were invited to participate and comment on the preparation of the UWMP. EGWD sent letters to each agency stating that the UWMP was being updated and they were invited to participate in the process. These agencies either interact with the EGWD or have direct interest in EGWD's water system. Copies of the letters, sent more than 60 days in advance of the public hearing to adopt, are included in **Appendix B**.

Table 1 – Coordination With Other Agencies							
Coordinating Agencies	Participated in UWMP Process	Commented on Draft	Attended Public Meetings	Contacted for Assistance	Received Copy of Draft UWMP	Received Notice of Intention to Adopt	Not Involved/No Information
Sacramento County Water Agency	✓			✓		✓	
Elk Grove Public Works Dept.						✓	
Elk Grove Planning Dept.						✓	
Elk Grove Unified School District					✓	✓	
Cosumnes CSD						✓	
Sacramento Regional County Sanitation District	✓			✓			

1.3 Public Participation

The Act requires encouragement of public participation, as well as a public hearing for the UWMP. The opportunity for public input was provided at three scheduled events as follows:

- May 25, 2011 – An update and presentation on the development of the UWMP was provided at the monthly EGWD board meeting.
- June 2, 2011 – The Board hosted a public workshop specific to the 2010 UWMP.
- June 22, 2011 – The Board held a public hearing prior to adopting the UWMP.

Copies of the draft report were available to the public at EGWD's office two weeks prior to the public hearing. **Appendix C** includes the noticing of the public hearing, which met the Act requirements.

In addition to noticing the public hearing, EGWD advertised the workshop within the community, and believes that the methods employed provided sufficient outreach such that a wide range of social, cultural, and economic elements of the community were given both opportunity and encouragement to participate.

On a broader public participation level, EGWD is a member of the Regional Water Authority (RWA), which is instrumental in making the public aware of regional water issues. RWA is a joint powers authority founded in 2001, with the mission to serve and represent over 20 agencies and water providers in the Sacramento area. Public participation is a large aspect of RWA's goals. EGWD is involved with RWA's School Education Program and Public Information Program.

1.4 Plan Adoption and Implementation

The draft UWMP was prepared during the spring of 2011, and a final UWMP was adopted by EGWD's Board on June 22, 2011, for submittal to DWR by July 31, 2011. **Appendix D** includes the Resolution of Plan Adoption by EGWD's Board. Upon adopting the UWMP and submitting it to DWR, the Board of Directors for EGWD affirms that the following will occur in accordance with the requirements of the Act:

- A copy of the UWMP will be submitted to the California State Library within 30 days.
- A copy of the UWMP will be provided to the City of Elk Grove within 30 days.
- Copies of the EGWD 2010 UWMP will be made available for public review during normal business hours at EGWD's office located at 9257 Elk Grove Blvd., Elk Grove, CA 95624

EGWD will use the 2010 UWMP as a planning tool, as well as for implementing and maintaining its focus on DMMs in order to meet the 20% per capita water use reduction by 2020.

Section 2 – System Description

2.1 EGWD Overview

The EGWD has been a water purveyor in the southern part of Sacramento County for over 115 years, and previously went by the names Elk Grove Water Service and Elk Grove Water Works. The EGWD is a department of the Florin Resource Conservation District (FRCD) who purchased the water system in 1999. EGWD is governed by a five-member Board of Directors, serving four-year terms.

EGWD services its customers in two tariff areas with pumped groundwater and the purchase of treated conjunctive use (groundwater and surface water) water from the County of Sacramento Water Agency (SCWA). The EGWD service area covers approximately 13 square miles and is bounded by Sheldon Road to the north, Highway 99 to the west, Grant Line Road to the east, and the Union Industrial Park to the south.

2.2 EGWD System Overview

The EGWD is comprised of two service areas referred to as Tariff Area No. 1 and Tariff Area No. 2. Tariff Area No. 1 is comprised of approximately 7,930 customers and its service boundary encompasses approximately 3,145 acres. Tariff Area No. 1 is supplied by groundwater wells, seven which are active, and a potable groundwater treatment plant with aboveground storage tanks.

Tariff Area No. 2 has a service area of approximately 4,875 acres and a customer base of approximately 4,115 connections. The Sacramento County Water Agency wholesales the water to the EGWD customers in Tariff Area No. 2, under the first amended and Restated Master Water Agreement between SCWA and FRCD. EGWD is responsible for billing and customer service for Tariff Area No. 2. A service area map is included in **Appendix E**.

While referred to by the District as Tariff Areas, the differentiation has to do with the separate water suppliers for Tariff Areas Nos. 1 (EGWD) and 2 (SCWA). The rate schedules for the areas are identical.

2.2.1 Transmission and Distribution Main Facilities

EGWD is responsible for the maintenance and operation of the transmission and distribution mains for Tariff Area No. 1 and the distribution mains for Tariff Area No. 2.

2.2.2 Groundwater Wells

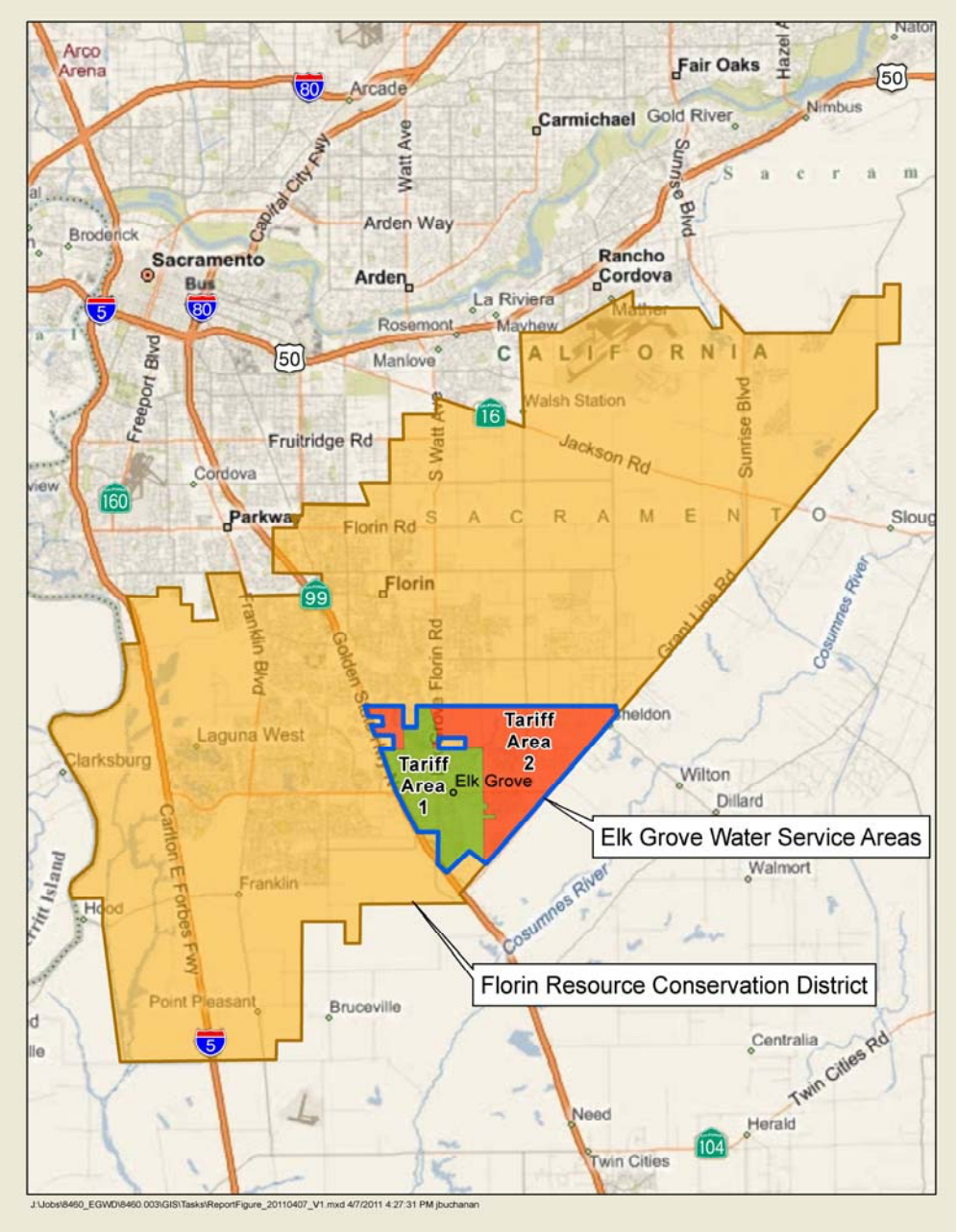
EGWD owns and operates groundwater wells that provide potable water to the Tariff Area No. 1 customers. The groundwater wells within the EGWD system obtain water from aquifers between 200 and 1,000 feet below the ground elevation.

2.2.3 Water Treatment Plant and Storage Tank

The EGWD owns and operates a water treatment plant site that receives water from wells. This treatment plant also includes a pump station and two 1.0 million gallon aboveground water storage tanks. This facility is used to serve the customers within Tariff Area No. 1. The water treatment plant facility is referred to as the Railroad Street Treatment and Storage Facility. EGWD also has a well and water treatment plant in the south end of Tariff Area No. 1. This facility is currently not in service and is classified as a "stand-by" well with the California Department of Public Health (CDPH). This facility is referred to as the Hampton Water Treatment Plant. There is a single water treatment plant within the Tariff Area No. 2 service boundary, which is owned and operated by SCWA. This plant is referred to as the East Elk Grove Groundwater Treatment Plant.

2.3 Location

The FRCD is located in the southern portion of Sacramento County and its service boundary encompasses approximately 8,300 acres. The FRCD service area is shown on **Figure 1**. EGWD, being a portion of the FRCD service boundary, is bounded to the north by Sheldon Road, the east by Grant Line Road, the south by Industrial Park, and the west by State Route 99. EGWD's main office is located at 9257 Elk Grove Boulevard, Elk Grove, CA 95624.



Source: ESRI ArcGIS Online

Figure 1 – Florin Resource Conservation District Vicinity Map

2.4 Climate

The EGWD service area has a climate characterized by damp to wet, cool winters and hot, dry summers. The wet season is generally October through April. The mean annual temperature is 61° F. Summer heat is often moderated by a sea breeze known as the "delta breeze" which comes through the Sacramento-San Joaquin River Delta from the San Francisco Bay. On average, there are approximately 75 days when the high temperature exceeds 90° F. The average annual precipitation is approximately 18 inches.

The Western Regional Climate Center was used to document historical data trends for regional temperature and precipitation records. The Sacramento Executive Airport station is the nearest station and is located northwest of EGWD. **Table 2** displays the monthly averages for maximum and minimum temperatures and precipitation.

Table 2 – Elk Grove Water District Climate Conditions

	Jan	Feb	Mar	Apr	May	Jun	Jul
Monthly Average ET_o (in)	1.55	2.24	3.72	5.10	6.82	7.80	8.68
Total Rainfall (in)	3.60	3.10	2.35	1.17	0.50	0.16	0.03
Average Maximum Temperature (F)	53.4	59.8	64.7	71.4	80.0	87.2	92.8
Average Minimum Temperature (F)	37.9	41.1	43.1	45.9	50.7	55.4	58.2
	Aug	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**	
Monthly Average ET_o (in)	7.75	5.70	4.03	2.10	1.55	57.00	
Total Rainfall (in)	0.06	0.26	0.92	2.06	3.06	17.26	
Average Maximum Temperature (F)	91.4	87.6	77.7	63.7	53.7	73.6	
Average Minimum Temperature (F)	57.8	55.8	50.1	42.6	38.3	48.1	

Source: Monthly climate summary from Western Regional Climate Center, Sacramento Executive Airport station California (047630). ET_o report from California Irrigation Management Information System - Zone 14.

2.5 Population

The year 2000 population of the EGWD was calculated using data from the U.S. Census Bureau Website, www.census.org, and the steps outlined in "Baseline Daily Per Capita Water Use" (Section M) and in Appendix A of the Guidebook. Population for the years 2005 and 2010 were calculated by applying a ratio of population to residential service connections.

With the use of the Geographic Information System (GIS) boundaries for both Tariff Area No. 1 and Tariff Area No. 2, the population projections for future years beyond 2010 were calculated and are presented in **Table 3**. To determine the projected populations for years after 2010, the SACOG Website and land use data from the City of Elk Grove's General Plan was used to determine build-out populations. The population projections for 2015 to 2035 were estimated for each five-year estimate based upon assumed population absorption. Tariff Area No. 1 is currently 90-95% built-out and is assumed to build out through 2020. Tariff Area No. 2 was assumed to reach build out at 2030.

Table 3 – Elk Grove Water District Population – Current and Projected

	2000	2010	2015	2020	2025	2030	2035	Data Source
Tariff Area No. 1	22,350	22,550	24,395	26,300	26,300	26,300	26,300	U.S. Census and City of Elk Grove General Plan
Tariff Area No. 2	2,040	12,000	14,050	16,100	18,130	20,160	20,160	U.S. Census and City of Elk Grove General Plan
Total Service Area Population	24,390	34,550	38,445	42,400	44,420	46,460	46,460	

2.6 Demographics

The EGWD service area demographics are consistent with that of the City of Elk Grove. Elk Grove, according to the 2000 Census data, consisted of approximately 60,000 people and 18,500 households. Of that total, the EGWD service area contained a population of approximately 24,400 with 8,100 residential households. It is estimated that the average household family consists of 3.0 persons per household, which is consistent with the City of Elk Grove. The majority of the EGWD service area is residential-type development. Commercial business uses consists of approximately 11.5% of the land use. There is less than 2.5% of industrial-type land use.

2.7 EGWD Customer Base

The build-out of the EGWD service area consists mainly of residential, multi-family, and commercial land uses. The City of Elk Grove General Plan (General Plan) was the basis for the calculation of the total future customer connections and future population estimates. A copy of the April 2009 City of Elk Grove General Plan Land Use Exhibit is presented in **Appendix F** for reference. Following is a brief discussion on the main land use categories that constitute the EGWD service area.

2.7.1 Single-Family

Single-family customers make up approximately 84.0% of the service connections in the EGWD's system. Single-family customers are made up of single-family residential homes, rural residential, and estate residential.

2.7.2 Multi-Family

Multi-family customers make up approximately 2.0% of the land use area within the combined tariff areas. Multi-family customers include apartments, duplexes, and a trailer park within the EGWD.

2.7.3 Commercial/Institutional

Commercial and institutional customers make up approximately 11.5% of the service area in EGWD's tariff areas. Commercial/institutional and public/quasi public customers include any commercial businesses, schools, churches, or business parks.

2.7.4 Industrial

Industrial-type land uses consist of approximately 2.5% of the build-out land use. These land uses are mainly in the Tariff Area No. 1 service area and are concentrated along State Route 99 and the Union Pacific Railroad corridor. These land uses consist of institutional, public/quasi-public, light industrial, and heavy industrial.

Section 3 – System Demands

This section includes the assumptions, methods, and rationale used to generate the gross water use and baseline per capita per day water use required to generate the 2020 target water use demands. The baseline and target demands were developed specific to EGWD, as opposed to being based upon regional data.

The following sections discuss the approaches used to develop the baselines and target demands that are consistent with the Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use that is presented in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan."

3.1 Baselines and Targets

Beginning with the 2010 UWMP, retail water suppliers are required to include the following:

- Baseline daily per capita water use.
- Urban water use target for 2020.
- Interim water use target for 2015.

In accordance with the Act requirements, a 10-year continuous calendar year was used to generate an average (baseline) per capita per day water use, since less than 10% of recycled water is used within the EGWD service area. In fact, no recycled water is used within the EGWD service area. Gross water usage was determined based upon the annual usage reported to CDPH by EGWD. EGWD reported usage for pumped groundwater and surface water, which were attributed 100% each to Tariff Area No. 1 and Tariff Area No. 2, respectively. **Table 4 and Table 5** present the details of the data used to calculate the baseline water use. Using the allowable ranges of historical data, EGWD selected the years 1994-2004 to calculate baseline usage. (Note: Data was not located for 1997, so 1996 and 1998 were treated as continuous for purposes of the analysis.) This resulted in a calculated baseline water use of 253 gpcd.

The Guidebook identifies up to four methods that can be used to calculate the urban water use target. A water agency is free to utilize the results from any method. Each of these methods is discussed below. EGWD used Method 1 to establish its urban water use target.

> Method 1 – Target is 80% of the water supplier's baseline per capita water use. This results in a water use target of 202 gpcd in 2020, based upon the baseline of 253 gpcd. The interim target water use target is 227 gpcd in 2015.

Method 2 – Per capita daily water use estimated using a sum of performance standards. This method requires accurate estimates of all landscaped areas within the EGWD, such as through the use of satellite imagery or site visits.

Method 3 – Ninety-five percent of the applicable regional target.

Method 4 – This approach is based upon calculated reduction targets.

As mentioned previously, EGWD decided to use Method 1 in setting the target water use at 202 gpcd in 2020.

Table 4 – Base Period Ranges

Base	Parameter	Value	Units
10- to 15-year Base Period	2008 Total Water Deliveries[1]	9,437	AFY
	2008 Total Volume of Delivered Recycled Water	0	AFY
	2008 Recycled Water as a Percent of Total Deliveries	0	Percent
	Number of Years in Base Period[2]	10	Years
	Year Beginning Base Period Range	1994	
	Year Ending Base Period Range	2004	
5-year Base Period	Number of Years in Base Period	5	Years
	Year Beginning Base Period Range	2003	
	Year Ending Base Period Range	2007	

[1]Volume is in AFY.

[2]Data was not located for 1997, so 1996 and 1998 were treated as contiguous for purposes of the analysis.

Table 5 – Base Daily Per Capita Water Use – 10 Year Range

Base Period Year		Distribution System Population	Daily System Gross Water Use (gpd)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Calendar Year			
Year 1	1994	19,525	4,974,247	255
Year 2	1995	20,205	5,459,726	270
Year 3	1996	19,615	5,525,548	282
Year 4	1998	21,300	5,076,051	238
Year 5	1999	21,065	5,781,319	274
Year 6	2000	24,390	5,723,112	235
Year 7	2001	24,390	6,211,263	255
Year 8	2002	28,525	7,034,820	247
Year 9	2003	30,040	7,116,497	237
Year 10	2004	31,800	7,583,288	238
			Base Daily Per Capita Water Use	253

As an additional step, the Guidebook requires that a maximum allowable 2020 target be calculated, and that the target used cannot be set any higher than that number. This is established by calculating a continuous 5-year period of the average daily per capita water use ending no earlier than 2007, and multiplying the average daily water use by 95%. EGWD calculated the 5-year average from 2003 to 2007, and the resulting average for this period of time is 240 gpcd; 95% of this water use is 228 gpcd. In accordance with the Guidebook, the 2020 target per capita water use cannot be higher than 228 gpcd. **Table 6** shows the calculation of the average daily per capita water use for the 5-year span.

Table 6 – Base Daily Per Capita Water Use – 5 Year Range

Base Period Year		Distribution System Population	Daily System Gross Water Use (ggd)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Calendar Year			
Year 1	2003	30,050	7,116,497	237
Year 2	2004	31,800	7,583,288	238
Year 3	2005	32,950	7,065,753	214
Year 4	2006	33,495	8,380,822	250
Year 5	2007	33,900	8,893,150	262
			Base Daily Per Capita Water Use	240

3.2 Water Demands

This section discusses the historic and future projected water demands for EGWD for both Tariff Area No. 1 and Tariff Area No. 2. The demands for Tariff Area No. 2 were provided to SCWA to incorporate into its UWMP as a wholesale water supply requirement, refer to **Table 21.**

EGWD's historical gross water use includes records for both Tariff Area No. 1 and Tariff Area No. 2. The billing software used by EGWD only recorded the customer use records by categories of residential, commercial, public, or other. The residential water connections are not distinguished between single-family and multi-family. **Table 7, Table 8, Table 9,** and **Table 10** present the historical data from EGWD that were presented to the California Department of Health Services on annual reports.

Table 7– Water Deliveries (Tariff Area No. 1) – Actual 2005					
	2005				
	Metered		Not Metered		Total[1, 2]
Water Use Sectors	# of Accounts	Volume[3]	# of Accounts	Volume[3]	Volume
Single-Family	1,443	--	5,804	--	--
Multi-Family[2]	--	--	--	--	--
Commercial	219	--	144	--	--
Industrial	--	--	--	--	--
Institutional/ Governmental	--	--	--	--	--
Landscape	--	--	--	--	--
Agriculture	--	--	--	--	--
TOTAL	1,662	1,180	5,948	4,219	5,399

[1]Volume is in AFY.
[2]EGWD customer billings do not distinguish between single-family and multi-family connections.
[3]Volumes by service connection type are not available.

Table 8 – Water Deliveries (Tariff Area No. 2) – Actual 2005					
	2005				
	Metered		Not Metered		Total[1, 2]
Water Use Sectors	# of Accounts	Volume[3]	# of Accounts	Volume[3]	Volume
Single-Family	3,847	--	--	--	--
Multi-Family[2]	--	--	--	--	--
Commercial	87	--	--	--	--
Industrial	--	--	--	--	--
Institutional/ Governmental	--	--	--	--	--
Landscape	--	--	--	--	--
Agriculture	--	--	--	--	--
TOTAL	3,934	2,516	0	0	2,516

[1]Volume is in AFY.
[2]EGWD customer billings do not distinguish between single-family and multi-family connections.
[3]Volumes by service connection type are not available.

Table 9 – Water Deliveries (Tariff Area No. 1) – Actual 2010					
	2010				
	Metered		Not Metered		Total[1]
Water Use Sectors	# of Accounts	Volume[3]	# of Accounts	Volume[3]	Volume
Single-Family	2,663	--	4,855	--	--
Multi-Family[2]	--	--	--	--	--
Commercial	278	--	136	--	--
Industrial	--	--	--	--	--
Institutional/ Governmental	--	--	--	--	--
Landscape	--	--	--	--	--
Agriculture	--	--	--	--	--
TOTAL	2,941	1,405	4,991	2,380	3,785

[1]Volume is in AFY.
[2]EGWD customer billings do not distinguish between single-family and multi-family connections.
[3]Volumes by service connection type are not available.

Table 10 – Water Deliveries (Tariff Area No. 2) – Actual 2010					
	2010				
	Metered		Not Metered		Total[1]
Water Use Sectors	# of Accounts	Volume[3]	# of Accounts	Volume[3]	Volume
Single-Family	3,999	--	--	--	--
Multi-Family[2]	--	--	--	--	--
Commercial	113	--	--	--	--
Industrial	--	--	--	--	--
Institutional/ Governmental	--	--	--	--	--
Landscape	--	--	--	--	--
Agriculture	--	--	--	--	--
TOTAL	4,112	2,935	0	0	2,935

[1]Volume is in AFY.
[2]EGWD customer billings do not distinguish between single-family and multi-family connections.
[3]Volumes by service connection type are not available.

Table 11 and Table 12 present the projected Tariff Area No. 1 and Tariff Area No. 2 metered and non-metered connections and gross water use for 2015. EGWD's customer billing software does not have the capacity to categorize the residential customers by structure type. For this reason, presented on **Table 7** through **Table 12** are the total numbers of accounts by single-family and commercial only.

Table 11 – Water Deliveries (Tariff Area No. 1) – Projected 2015					
	2015				
	Metered		Not Metered		Total[1]
Water Use Sectors	# of Accounts[3]	Volume[4]	# of Accounts	Volume	Volume
Single-Family	8,130	--	--	--	--
Multi-Family[2]	--	--	--	--	--
Commercial	430	--	--	--	--
Industrial	--	--	--	--	--
Institutional/ Governmental	--	--	--	--	--
Landscape	--	--	--	--	--
Agriculture	--	--	--	--	--
TOTAL[1]	8,560	6,205	0	0	6,205

[1]Volume is in AFY.
[2]EGWD billing does not distinguish between single-family and multi-family connections.
[3]EGWD is estimating all connections will be metered by 2015.
[4]Volumes per service connections are not available from EGWD.

Table 12 – Water Deliveries (Tariff Area No. 2) – Projected 2015					
	2015				
	Metered		Not Metered		Total[1]
Water Use Sectors	# of Accounts[3]	Volume[4]	# of Accounts	Volume	Volume
Single-Family	4,680	--	--	--	--
Multi-Family[2]	--	--	--	--	--
Commercial	145	--	--	--	--
Industrial	--	--	--	--	--
Institutional/ Governmental	--	--	--	--	--
Landscape	--	--	--	--	--
Agriculture	--	--	--	--	--
TOTAL[1]	4,825	3,570	0	0	3,570

[1]Volume is in AFY.
[2]EGWD billing does not distinguish between single-family and multi-family connections.
[3]EGWD is estimating all connections will be metered by 2015.
[4]Volumes per service connections are not available from EGWD.

Tariff Area No. 1 is estimated to be built-out in 2020. **Table 13** and **Table 14** represent the built-out demands of Tariff Area No. 1 and Tariff Area No. 2, based upon the 2020 unit water demand factor of approximately 202 gpcd.

Table 13 – Water Deliveries (Tariff Area No. 1) - Projected 2020

	2020				
	Metered		Not Metered		Total[1]
Water use sectors	# of Accounts	Volume	# of Accounts	Volume	Volume
Single-Family	8,745	--	--	--	--
Multi-Family	--	--	--	--	--
Commercial	580	--	--	--	--
Industrial	--	--	--	--	--
Institutional/ Governmental	--	--	--	--	--
Landscape	--	--	--	--	--
Agriculture	--	--	--	--	--
TOTAL[1]	9,325	5,940	0	0	5,940

[1]Volume is in AFY.

Table 14 – Water Deliveries (Tariff Area No. 2) - Projected 2020

	2020				
	Metered		Not Metered		Total[1]
Water use sectors	# of Accounts	Volume	# of Accounts	Volume	Volume
Single-Family	5,360	--	--	--	--
Multi-Family	--	--	--	--	--
Commercial	177	--	--	--	--
Industrial	--	--	--	--	--
Institutional/ Governmental	--	--	--	--	--
Landscape	--	--	--	--	--
Agriculture	--	--	--	--	--
TOTAL[1]	5,537	3,640	0	0	3,640

[1]Volume is in AFY.

Table 15 and Table 16 show the estimated projected Tariff Area No. 1 and Tariff Area No. 2 demands. It is assumed that Tariff Area No. 1 is built-out in 2020, and Tariff Area No. 2 is built-out in 2030.

Table 15 – Water Deliveries (Tariff Area No. 1) – Projected 2025, 2030, and 2035

	2025		2030		2035 – Optional	
	Metered		Metered		Metered	
Water Use Sectors	# of Accounts	Volume[1]	# of Accounts	Volume[1]	# of Accounts	Volume[1]
Single-Family	8,745	--	8,745	--	8,745	--
Multi-Family	--	--	--	--	--	--
Commercial	580	--	580	--	580	--
Industrial	--	--	--	--	--	--
Institutional/ Governmental	--	--	--	--	--	--
Landscape	--	--	--	--	--	--
Agriculture	--	--	--	--	--	--
TOTAL[1]	9,325	5,940	9,325	5,940	9,325	5,940

[1]Volume is in AFY.

Table 16 – Water Deliveries (Tariff Area No. 2) – Projected 2025, 2030, and 2035

	2025		2030		2035 – Optional	
	Metered		Metered		Metered	
Water Use Sectors	# of Accounts	Volume[1]	# of Accounts	Volume[1]	# of Accounts	Volume[1]
Single-Family	6,040	--	6,720	--	6,720	--
Multi-Family	--	--	--	--	--	--
Commercial	208	--	240	--	240	--
Industrial	--	--	--	--	--	--
Institutional/ Governmental	--	--	--	--	--	--
Landscape	--	--	--	--	--	--
Agriculture	--	--	--	--	--	--
TOTAL[1]	6,248	4,100	6,960	4,560	6,960	4,560

[1]Volume is in AFY.

The Act requires that projected increased water use for proposed lower income single-family and multi-family housing be specifically identified. SACOG has prepared and adopted a 2006-2013 Regional Housing Needs Plan, which identifies the City of Elk Grove's allocation of low and very low housing at 49.8%. EGWD believes it is a reasonable assumption to apply this percentage within their district boundary through build out, and that based upon the typical

housing product in these categories, per capita water use would be generally consistent across the overall range of housing units.

Table 17 lists the projected increases. Water demands for these units are included in future water demands used elsewhere in this UWMP.

Table 17 – Lower Income Projected Increased Water Demands

Lower Income Water Demands[1]	2015	2020	2025	2030	2035
Single- and Multi-Family Residential (Tariff Area No. 1)	225	422	422	422	422
Single- and Multi-Family Residential (Tariff Area No. 2)	259	462	691	920	920
TOTAL[1]	484	884	1,113	1,342	1,342

[1]Volume is in AFY.

EGWD is not planning to be in a position to wholesale or sell water to another water agency in the future. **Table 18** shows that the EGWD does not anticipate on wholesaling any water from its current and planned water supply sources.

Table 18 – Sales to Other Water Agencies

Water Distributed	2005	2010	2015	2020	2025	2030	2035 Optional
N/A	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0

Table 19 presents areas of water use that are not a part of residential, commercial, or industrial uses. In general, potable water is used exclusively for residential, commercial, public, and industrial uses. System losses are not identified in the table since EGWD uses the end user customer billings to document the gross water uses. Once all the connections are metered, EGWD shall record system losses as an independent volume. At this time, system losses are included in the customer demands.

Table 19 – Additional Water Uses and Losses

Water Use	2005	2010	2015	2020	2025	2030	2035 Optional
Saline Barriers	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Groundwater Recharge	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Conjunctive Use	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Raw Water	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Recycled Water	N/A	N/A	N/A	N/A	N/A	N/A	N/A
System Losses	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL	0	0	0	0	0	0	0

Table 20 presents a summary of the potable water uses for EGWD. Additional water use and loss volumes are not available, since EGWD calculates the gross water use by the customer billings.

Table 20 – Total Water Use							
Water Use [1]	2005	2010	2015	2020	2025	2030	2035
Total Water Deliveries (Tariff Area No. 1)	5,398	3,785	6,205	5,940	5,940	5,940	5,940
Total Water Deliveries (Tariff Area No. 2)	2,516	2,935	3,570	3,640	4,100	4,560	4,560
Sales to Other Water Agencies	0	0	0	0	0	0	0
Additional Water Uses and Losses	0	0	0	0	0	0	0
TOTAL	7,914	6,720	9,775	9,580	10,040	10,500	10,500
[1]Volume is in AFY.							

3.3 Water Demand Projections

Future potable water demand needs have been calculated through 2035, based upon historical gross water use and customer connections. In regards to Tariff Area No. 2, the calculated water estimated to be purchased from SCWA is presented in **Table 21**. These estimated demands were supplied to SCWA to use in the 2010 Sacramento County Zone 41 UWMP.

Table 21 – Retail Agency Demand Projections Provided to Wholesale Suppliers							
Wholesaler[1]	Contracted Volume	2010	2015	2020	2025	2030	2035
SCWA	4,600	2,935	3,570	3,640	4,100	4,560	4,560
[1]Volume is in AFY.							

3.4 Water Use Reduction Plan

EGWD plans to implement a variety of DDMs as discussed in Section 6, with the goal of reducing water use to comply with the Water Conservation Bill of 2009. As discussed in Section 3.1, EGWD is setting a water use reduction goal of 20% by 2020, reducing per capita usage from a current average use of 253 gpcd to 202 gpcd by 2020. An interim target has also been set for reducing the per capita water use of 227 gpcd by 2015.

Section 4 – System Supplies

4.1 Water Sources

EGWD relies primarily on groundwater as the source of supply for both service areas, Tariff Area No. 1 and Tariff Area No. 2. Groundwater is supplied to Tariff Area No. 1 by a series of three shallow and four deep wells, which are owned and operated by EGWD. There are normally closed intertie connections with the SCWA. Tariff Area No. 2 is supplied water from the SCWA through a wholesale master water agreement with SCWA. Tariff Area No. 2, which is located within SCWA's Zone 40, uses both groundwater and surface water as sources of water supply. EGWD has an agreement with SCWA to provide the water necessary to serve the Tariff Area No. 2 franchise area. Although SCWA has recently acquired surface water supplies and recycled water, Tariff Area No. 2 is not currently supplied with recycled water and currently does not receive any significant amount of surface water. SCWA is developing substantial surface water supplies as part of the Freeport Regional Water Authority (FRWA), which may become available to Tariff Area No. 2. The quality of the groundwater supplied by EGWD meets the California Department of Public Health (CDPH) drinking water standards. EGWD provides centralized water quality treatment to remove manganese and provide blending to reduce arsenic concentrations at the Railroad Street Water Treatment Plant for EGWD's four deep wells. The three active shallow wells do not require treatment to meet CDPH water quality standards. EGWD does not provide recycled water to its service areas.

Table 22 presents the current and future water supplies used and that are planned to be used by EGWD.

Table 22 – Water Supplies – Current and Projected

Water Supply Sources		2010	2015	2020	2025	2030	2035
Water Purchased From[1]	Wholesaler Supplied Volume (Yes/No)						
Sacramento County Water Agency	Yes	2,935	3,570	3,640	4,100	4,560	4,560
Supplier-Produced Groundwater		3,785	6,205	5,940	5,940	5,940	5,940
Supplier-Produced Surface Water		N/A	N/A	N/A	N/A	N/A	N/A
Transfers in		N/A	N/A	N/A	N/A	N/A	N/A
Exchanges In		N/A	N/A	N/A	N/A	N/A	N/A
Recycled Water		N/A	N/A	N/A	N/A	N/A	N/A
Desalinated Water		N/A	N/A	N/A	N/A	N/A	N/A
TOTAL		6,720	9,775	9,580	10,040	10,500	10,500

[1]Volume is in AFY.

As part of the coordination efforts with the wholesale water supplier SCWA, **Table 23** was sent to SCWA to use in its UWMP. The data in the table represents the existing and planned wholesale water supplies that were calculated by EGWD for use in the Tariff Area No. 2 service area.

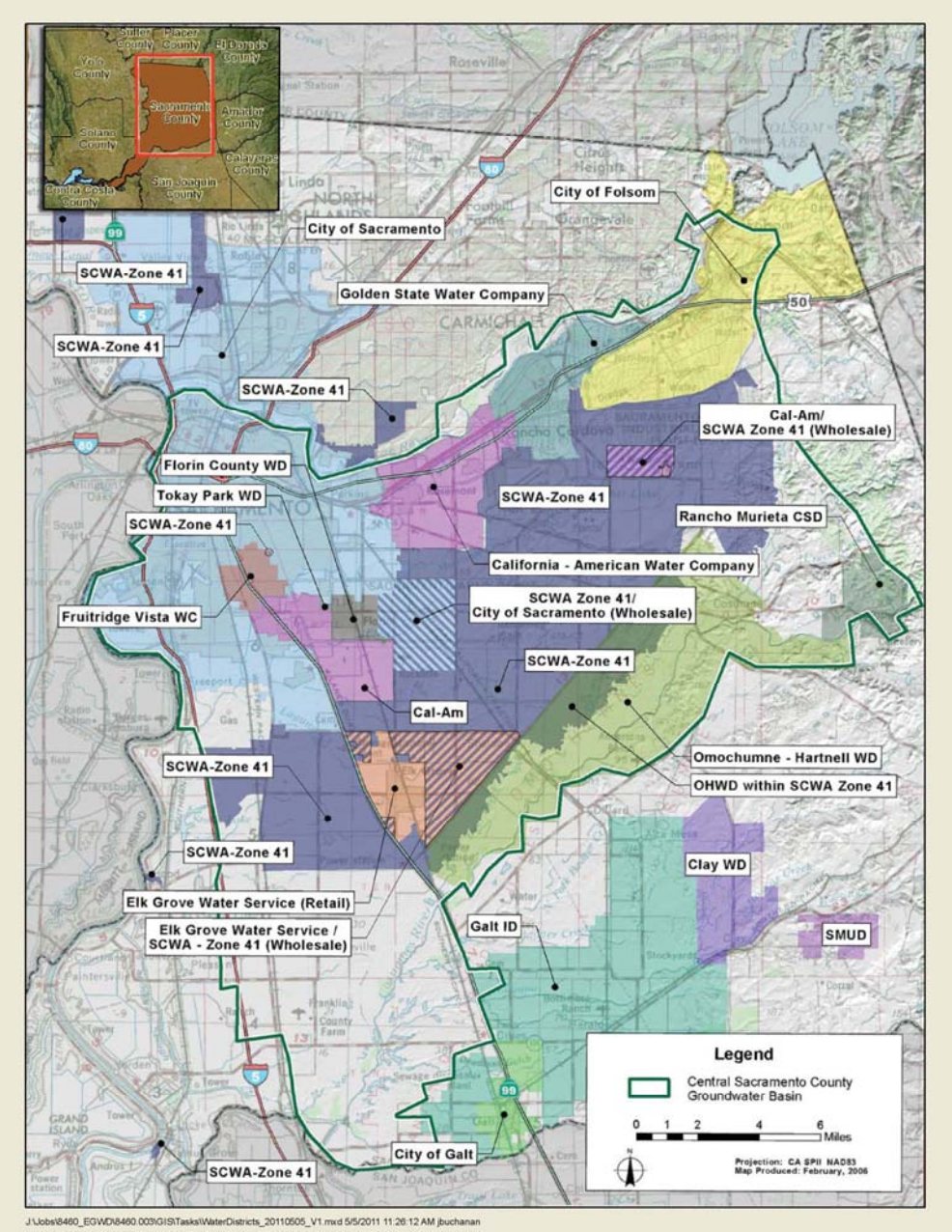
Table 23 – Wholesale Supplies – Existing and Planned Sources of Water

Wholesale Sources[1]	Contracted Volume	2015	2020	2025	2030	2035
Conjunctive Use (Groundwater and Surface Water)	4,560	3,570	3,640	4,100	4,560	4,560

[1]Volume is in AFY.

4.2 Groundwater

EGWD pumps groundwater from the South American Subbasin (Basin 5-21.65), as defined in the DWR Bulletin 118 – Update 2003 (**Appendix G**). Resultant of the Water Forum Agreement, the groundwater basins underlying the Sacramento County, as defined in the Central Sacramento County Groundwater Management Plan (CSCGMP), have been divided into three geographic subareas: (1) North Basin, (2) Central Basin, and (3) South Basin. A copy of the CSCGMP is included on a CD in **Appendix H**. The former general manager of EGWD was a key member of the task force that developed this plan. EGWD overlies and extracts groundwater from the Central Basin from seven wells that range in total depth from 450 to 1,075 feet below ground surface. The public water systems or water service providers that receive water from the Central Basin include EGWD, the California American Water Company, SCWA, the Golden State Water Company, and numerous private landowners who have overlying rights on their property. The Central Basin water providers and the groundwater basin boundaries are shown on **Figure 2 and Figure 3,** respectively. The Central Basin is not adjudicated or considered to be in a state of being over drafted. Due to the active planning by water agencies, the basin is not foreseen to be over drafted in the future.

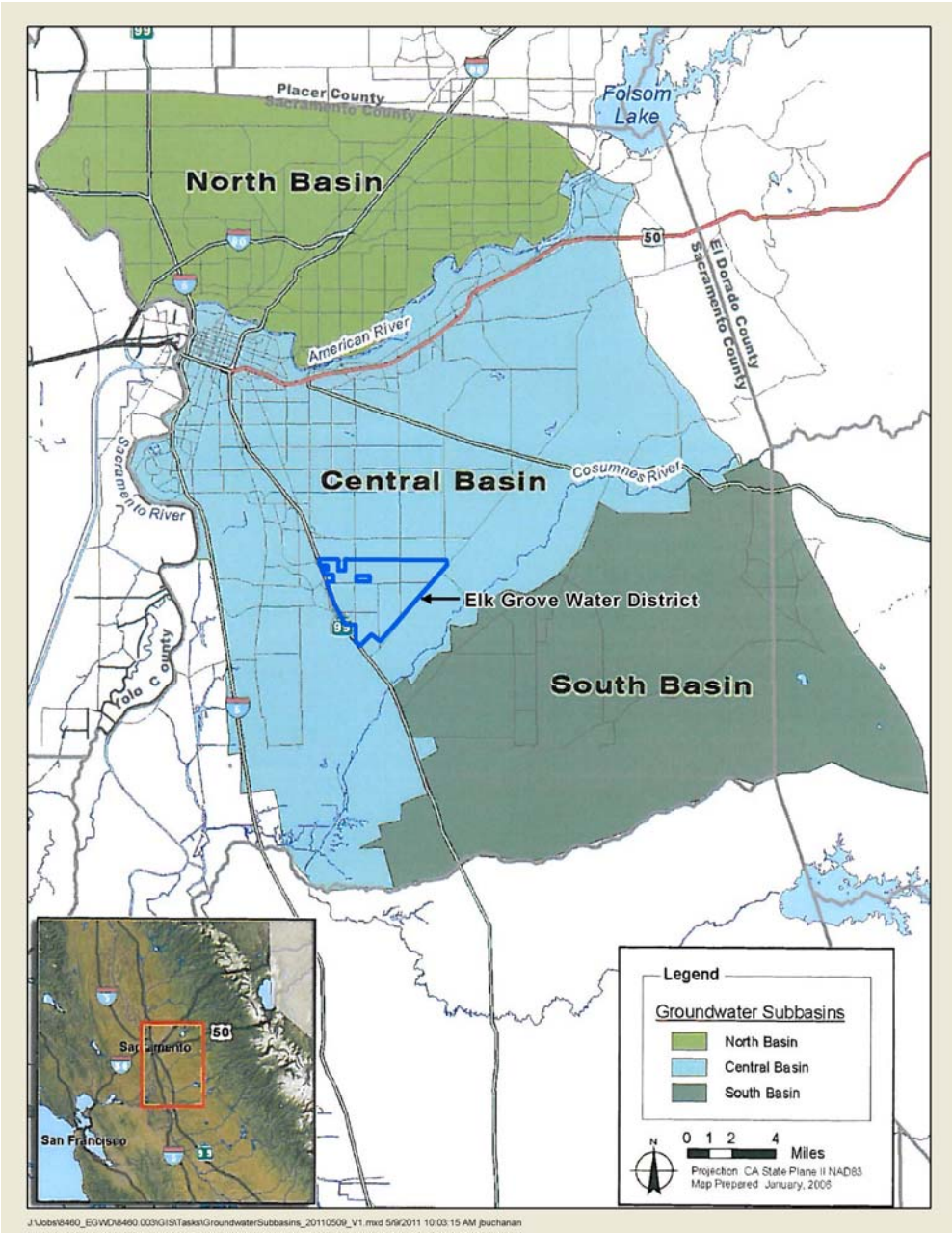


Source: Central Sacramento County Groundwater Management Plan (February 2006).
Figure 2 - Sacramento County Central Basin Water Purveyors

4.2.1 Regional Groundwater Planning

Groundwater use is regularly monitored within the Sacramento County region. The Sacramento Groundwater Authority (SGA) Basin Management Report that was prepared in 2007-2008, found that groundwater use in the Central Basin, where EGWD is located, has remained relatively constant at approximately 262,500 AFY during the preceding four years and had a high of 264,860 in 2008. In communication with the other groundwater users from the basin

(SCWA, the Golden State Water Company, and the California American Water Company), it is not anticipated that groundwater extraction would have increased in the years of 2009 or 2010, given the dramatic decline in home construction and the depressed local economy. This would indicate a remaining groundwater capacity of approximately 8,140 AFY in regards to the agreed-upon sustainable yield of 273,000 AFY for the Central Basin stakeholders.



Source: Central Sacramento County Groundwater Management Plan (February 2006).
Figure 3 - Regional Sacramento County Groundwater Basins

4.2.2 Basin Description

EGWD is located in the Central Basin of the Sacramento County Groundwater Basin, as identified in the CSCGMP (February 2006). The Central Basin is a portion of the South American Subbasin of the greater Sacramento Valley Groundwater Basin. The South American Subbasin is bounded by the American River to the north, the Sacramento River to the west, the Sierra Nevada to the east, and the Cosumnes and Mokelumne Rivers to the south.

The Central Basin includes a number of groundwater users that consist of agriculture, agricultural residential, urban, and environmental uses. The Central Basin boundary was defined by the Sacramento County groundwater model that was used in the Water Forum process. In October 2004, SCWA adopted a Groundwater Management Plan (GMP) for the portion of the Central Basin that is served water through Zone 40 of the SCWA. As stated in the CSCGMP, the Water Forum estimated the long-term average annual sustainable groundwater pumping yield from the Central Basin to be 273,000 AFY.

Numerous water purveyors within Sacramento County pump groundwater from public groundwater wells. This data is being collected as part of the Water Forum Successor Effort's "Central Sacramento County Groundwater Forum," and is presented in the CSCGMP, February 2006. This document presents the expected groundwater pumping rates through 2030, if the groundwater extraction is not supplemented with additional surface water contracts. SCWA also completed a GMP under California Water Code Section 10750. The Water Forum estimated the long-term average annual sustainable groundwater pumping yield from the Central Basin to be 273,000 AFY.

Groundwater elevations are regularly monitored within the region by DWR. Some of these records date back to the early 1950s. Hydrographs in the vicinity of EGWD's service areas indicate that the groundwater elevations have declined from the early 1950s through the late 1970s. From approximately 1980, the groundwater elevations have remained relatively consistent, except for a temporary decline in the early to mid-1990s. The static depth to groundwater within EGWD currently ranges between 60 to 110 feet below the ground surface.

The aquifer system within the Central Basin consists of continental deposits of the late Tertiary to Quaternary age (DWR Bulletin 118). The major fresh water bearing geologic units are the Laguna Formation and the Mehrten Formation. EGWD has wells constructed in both of these formations. The Laguna Formation, which extends to a total depth of approximately 300 feet within the Central Basin, is used for private domestic wells and municipal water supply wells.

Water produced from the Laguna Formation and the Mehrten Formation is considered generally good quality with low total dissolved solids. Water produced from the Laguna Formation often meets all CDPH water quality standards, but exceeds the CPPH Maximum Contaminant Level (MCL) for arsenic within some areas of the Central Basin. The Mehrten Formation often contains manganese and odor, which exceed the CDPH MCLs. The upper portion of the Mehrten Formation, (between 300 feet to 700 feet within EGWD), often exceeds the CDPH MCL for arsenic within the Central Basin. The lower portion of the Mehrten Formation, (between 700 feet to 1,300 within EGWD) generally has concentrations of arsenic that are under the CDPH MCL, but still require treatment to remove manganese and odor.

4.2.3 Historical and Projected Groundwater Use

Table 24 presents the historical groundwater pumping volumes used to service Tariff Area No. 1.

Table 24 – Groundwater (Tariff Area No. 1) – Volume Pumped

Basin Name(s)	Metered or Unmetered[1]	2006	2007	2008	2009	2010
Central Basin / South American Subbasin	Metered	6,300	6,965	6,460	5,375	3,785
Total groundwater pumped[1]		6,300	6,965	6,460	5,375	3,785
Groundwater as a Percent of Total Water Supply		100%	100%	100%	100%	100%
[1]Volume is in AFY and based on volumetric monthly meter records.						

Table 25 presents the anticipated groundwater pumping volumes used to service Tariff Area No. 1.

Table 25 – Groundwater (Tariff Area No. 1) – Volume Projected to be Pumped

Basin name(s)	2015	2020	2025	2030	2035 - opt
Central Basin / South American Subbasin	6,205	5,940	5,940	5,940	5,940
Total Groundwater Pumped[1]	6,205	5,940	5,940	5,940	5,940
Percent of Total Water Supply	100%	100%	100%	100%	100%
[1]Volume is in AFY and based on projected volumetric monthly meter records.					

4.3 Water Service Reliability

The CSCGMP was adopted by the SCWA on February 2006. One goal of the CSCGMP was to model the groundwater basin and establish a sustainable annual groundwater yield for the Central Basin. The CSCGMP is the result of the Water Forum process, a decade-long effort

involving multiple agencies and stakeholders within the region, and culminated in the negotiation and signing of the Water Forum Agreement. The CSCGMP provides for the long-term protection of groundwater quantity and quality within the region, and contains policies directing the development of surface water supplies, conservation, and other measures to service urban development as it occurs, thereby protecting the sustainable annual groundwater yield threshold of 273,000 AF.

Based upon the Central Basin's total projected water supplies for normal, single-dry, and multiple-dry years over a 20-year projection, as demonstrated by the County's UWMP and GMP, the Central Basin will have sufficient water to meet estimated water demands for the build-out of the EGWD Tariff Area No. 1 and Tariff Area No. 2.

4.4 Transfer and Exchange Opportunities

EGWD has opportunities for limited potable water transfers or exchanges with SCWA. EGWD does have interties between Tariff Area No.1 and Tariff Area No. 2. This allows the available exchange of water between the two service areas by the use of 12 valves, which are normally closed. Since EGWD is surrounded on all sides by SCWA, SCWA would be the only viable water provider for the exchange of potable water. **Table 26** presents the current and proposed short-term water supply exchanges with SCWA. The estimated quantity represents a short-term exchange through the valves, if needed.

Table 26 – Transfer and Exchange Opportunities

Transfer Agency	Transfer or Exchange	Short Term or Long Term	Proposed Volume[1]
Sacramento County Water Agency	Emergency Exchange	Short Term	500
TOTAL			500

[1]Volume is in AFY.

4.5 Desalination

Desalination of ocean water is not physically or financially viable for EGWD, given its distance from the Pacific Ocean. Desalination of brackish groundwater is not an option, given the water quality of the groundwater basins from which SCWA and EGWD pump.

4.6 Wastewater Collection, Treatment, and Disposal

The EGWD lies within the sanitary sewer collection system of the Sacramento Area Sewer District (SASD), and the sanitary sewer treatment boundaries of the Sacramento Regional County Sanitation District (SRCSD). Based upon the estimated population within the EGWD service area, an approximate average daily dry weather flow of 4.7 MGD is conveyed by SASD

sanitary sewer mains to the Sacramento Regional Treatment Plant (SRWTP). This is based upon a unit flow factor of approximately 135 gallons per capita per day, and a population of 35,000 within the EGWD service boundary. Currently, the average daily dry weather flow into the SRWTP from the Sacramento area is approximately 135 MGD. Treated wastewater not recycled, as discussed in the next section, is discharged into the Sacramento River. The projected average dry weather flow in 2020 is approximately 218 MGD. EGWD does not own, operate, or maintain any wastewater collection or treatment facilities. **Table 27** presents the estimated sanitary sewer flow that is generated from the EGWD service areas of Tariff Area No.1 and Tariff Area No. 2. Since EGWD does not have recycled water backbone infrastructure to use recycled water, the volume shown meeting recycled water is zero. As mentioned previously, the volumes in **Table 27** and **Table 28** assumes a unit flow factor of 135 gallons per capita per day and the population projections in **Table 3**.

Table 27 – Wastewater Collection and Treatment

Type of Wastewater	2005	2010	2015	2020	2025	2030	2035
Wastewater collected from EGWD service area	4,455	5,220	5,805	6,425	6,715	7,010	7,010
Volume Meeting Recycled Water Standard	0	0	0	0	0	0	0

[1]Volumes is in AFY.

Since EGWD does not currently use recycled water and the future opportunities for using recycled water do not appear to be feasible, **Table 28** presents the current and projected wastewater disposal methods for the wastewater generated from the EGWD service areas.

Table 28 – Wastewater Disposal

Disposal Method	Treatment Level	2010	2015	2020	2025	2030	2035
Wastewater from EGWD service area discharged to Sacramento River	Secondary Effluent	5,220	5,805	6,425	6,715	7,010	7,010
Recycled Water from SRWTP	Tertiary	0	0	0	0	0	0
	TOTAL	5,220	5,805	6,425	6,715	7,010	7,010

[1]Volumes is in AFY

4.7 Recycled Water Background

SRCSD has a Water Recycling Program (WRP), which is a partnership between SRCSD, SCWA, and Sacramento County Environmental Management Department, Water Protection Division. Within this partnership, SRCSD is responsible for treating the wastewater and providing recycled water supply. SCWA utilizes the recycled water and is responsible for the

distribution to customers. In general, SCWA is responsible for the recycled water once the water is pumped from the wastewater treatment plant.

Since April 2003, SRCSD's WRP has provided a recycled water supply used for landscape irrigation, industrial uses, and environmental restoration. SRCSD's water recycling facility is located on the property of the SRWTP in the City of Elk Grove. The current recycling facility can sustainably provide up to 3.5 million gallons per day of recycled water to parks, landscaped street medians, and commercial and school sites in the Laguna West, Lakeside, and Stone Lakes developments. Recycled water treated at SRCSD's water recycling facility meets the California Department of Health Services' most stringent irrigation requirements for recycled water.

In January 2004, the SRCSD Board of Directors approved the concept for a large-scale WRP, which includes the following goals:

- Increase water recycling throughout the Sacramento region on the scale of 30 to 40 million gallons per day (MGD) over the next 20 years.
- Increase utilization of recycled water to expand SRCSD's effluent management options beyond continued discharge to the Sacramento River.
- Increase utilization of recycled water to meet growing non-potable demands, allowing Sacramento area water purveyors to reduce demands on their existing potable water supplies and reducing the need for additional water supplies in the future.

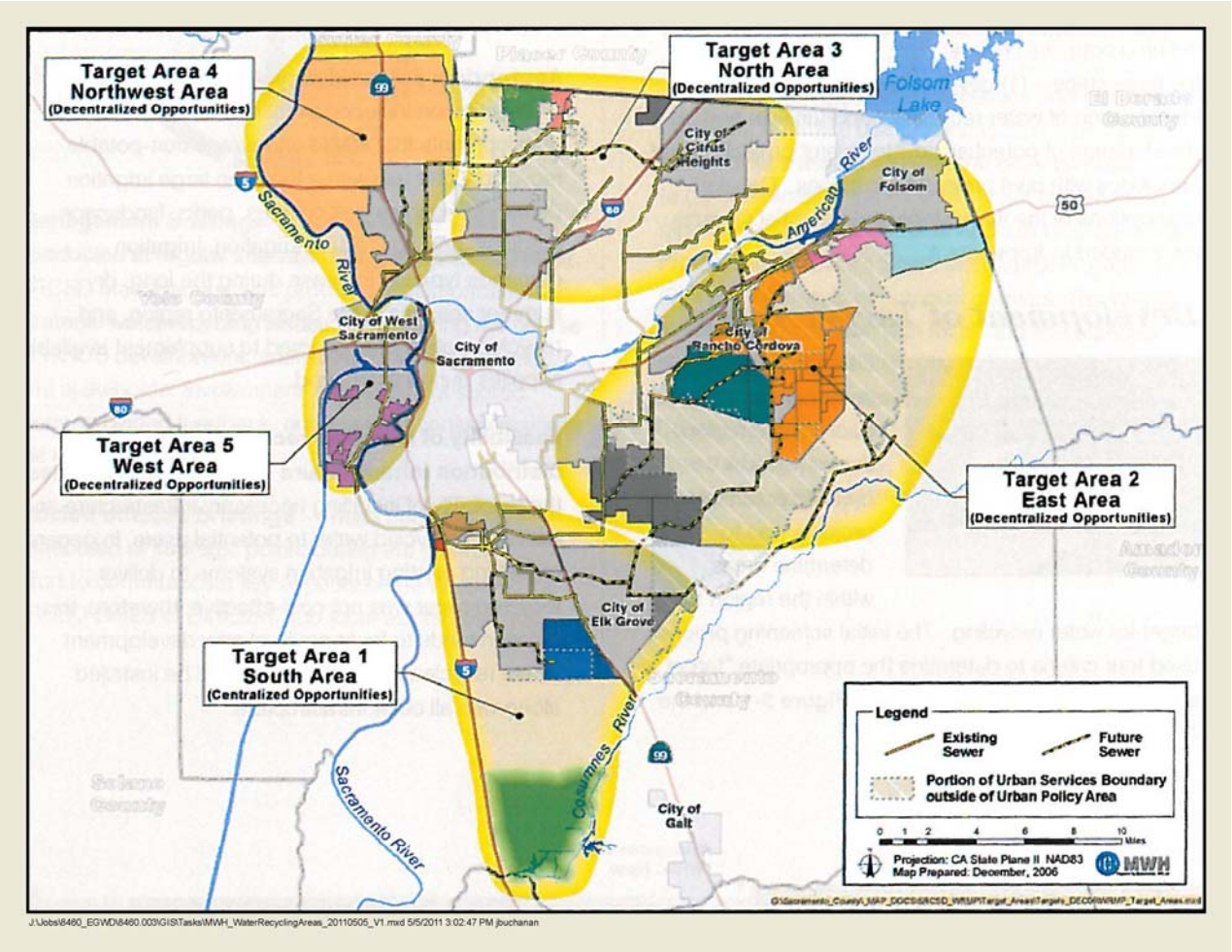
4.8 Coordination with SRCSD

EGWD staff and preparers of this UWMP met with SRCSD staff to discuss the current and future opportunities of supplying recycled water to EGWD's service area. SRCSD discussed the anticipated build-out service area anticipated through 2030. EGWD and SRCSD discussed the contents of the SRWTP's 2020 Master Plan and the Water Recycling Opportunities Study (WROS). The following section discusses the future opportunities for EGWD to utilize recycled water within its service area.

4.9 EGWD Recycled Water Opportunities

SRCSD prepared a study that investigates possible future recycled water use that is anticipated to be generated from the SRWTP. In November 2004, SRCSD began preparing its Water Recycling Opportunities Study (WROS). The WROS was the first step in identifying possible areas within Sacramento County where recycled water could be used on a large scale. These

areas of potential recycled water uses are referred to as Target Areas. The WROS identifies five Target Areas. Within the five Target Areas, the WROS identified 18 large-scale projects that are candidates for recycled water deliveries. These 18 projects were evaluated and ranked on five criteria that consisted of Life Cycle Cost, Water Supplies and Demands, annual Yield, Implementability, and Public Acceptance and Environmental Benefits. The Elk Grove Area-South County Agricultural and Habitat Area was ranked No. 1 with the highest priority to receive future recycled water. **Figure 4** shows the five highlighted Target Areas.



Source: Sacramento Regional County Sanitation District, Water Recycling Opportunities Study, February 2007.

Figure 4 - SRCSD Water Recycling Target Areas Map

EGWD is located within the boundary of the Target Area 1 South Area. Within Target Area No. 1, EGWD is located in an area that is shown to have a lesser potential for future recycled water use. In discussions with SRCSD staff, areas east of State Route 99 were not anticipated to receive recycled water due to: (1) limited overall use potential, (2) the cost of providing a conveyance system crossing State Route 99 to the east, and (3) the cost of installing distribution facilities in existing streets.

Target Area No. 2 involves a possible large recycled water transmission main that would be built from the Sacramento Regional Wastewater Treatment Plant (SRWTP) to the Rancho Cordova/Mather area. If these backbone facilities were constructed in the future, it may be possible for EGWD to work with SRCSD to construct a service line off the transmission main to serve Tariff Area No. 2. Based upon discussions with SRCSD staff, this possibility is currently being shown as less than anticipated. **Table 29** shows the projected recycled water uses through 2035.

Table 29 – Potential Future Recycled Water Use

Land Use	2015	2020	2025	2030	2035
Agricultural Irrigation	0	0	0	0	0
Landscape Irrigation	0	0	0	0	0
Commercial Irrigation	0	0	0	0	0
Golf Course Irrigation	0	0	0	0	0
Wildlife Habitat	0	0	0	0	0
Wetlands	0	0	0	0	0
Industrial Reuse	0	0	0	0	0
Groundwater Recharge	0	0	0	0	0
Seawater Barrier	0	0	0	0	0
Geothermal/Energy	0	0	0	0	0
Indirect Potable Reuse	0	0	0	0	0
Total	0	0	0	0	0

[1]Volumes is in AFY.

As the table shows, it is not anticipated that the EGWD service area will use recycled water for its existing built-out areas or the future growth areas for the next 20 years. Future possibilities will continue to be investigated and are planned to be discussed again in the 2015 EGWD UWMP. **Table 30** outlines the same land uses presented in **Table 29** and is used to document the projected recycled water use for 2010, as shown in the 2005 EGWD UWMP. As the shown in the table, the 2005 UWMP also did not anticipate the use of recycled water within the EGWD service area, due mainly to the lack of infrastructure.

Table 30 – 2005 UWMP Projection versus 2010 Actual		
Land Use	2010 Actual Use[1]	2005 UWMP Projection for 2010[1]
Agricultural Irrigation	0	0
Landscape Irrigation	0	0
Commercial Irrigation	0	0
Golf Course Irrigation	0	0
Wildlife Habitat	0	0
Wetlands	0	0
Industrial Reuse	0	0
Groundwater Recharge	0	0
Seawater Barrier	0	0
Geothermal/Energy	0	0
Indirect Potable Reuse	0	0
TOTAL	0	0
[1]Volumes is in AFY.		

As discussed within this section of the Plan, EGWD does not have the infrastructure to supply recycled water to its customers. On a regional perspective, it is anticipated that increased use of recycled water will occur, but in areas better suited for it. At this time, and as projected through 2035, financial incentives are not seen to be a viable option as shown in **Table 31**.

Table 31 – Methods to Encourage Recycled Water Use						
Actions	Projected Results					
	2010	2015	2020	2025	2030	2035
Financial Incentives[1]	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL	0	0	0	0	0	0
[1]Volumes is in AFY.						

4.10 Future Water Projects

EGWD is developing a Capital Improvement Program (CIP) that will identify anticipated future water system improvements planned to be constructed to meet future water demand projections. These improvements are estimated to be required based upon the timing of new land development projects. The water supply projects are listed in **Table 32**.

Table 32 – Potential Future Water Supply Projects								
Project Name[1]	Projected Start Date	Projected Completion Date	Potential Project Constraints	Normal Year Supply	Single Dry Year Supply	Multiple Dry Year First Year Supply	Multiple Dry Year Second Year Supply	Multiple Dry Year Third Year Supply
Source Capacity Improvement	5/2011	12/2011	Water Quality	2,200	2,100	2,100	2,000	1,900
South Deep Well	7/2011	12/2012	Treatment Plant Restoration	1,800	1,800	1,800	1,750	1,700
TOTAL				4,000	4,000	3,900	3,850	3,600
[1]Volumes are in AFY.								

The FY 2010-2011 Source Capacity Improvement Project consists of increasing the well capacity of the existing groundwater wells of Well 4D and Well 11D. The project consists of increasing the existing pumps from 125 horsepower to 200 horsepower. The project anticipates that groundwater pumping yields will be increased from approximately 1,400 gpm and 1,580 gpm to the yields shown in Table 32. The pumping rates shown within the table represent anticipated peak capacities and will not affect EGWDs ability to meet annual supply needs during multiple dry weather years. Peak pumping rates are estimated to drop due to resulting lower groundwater elevations during multiple dry weather years.

The South Deep Well project consists of constructing a new deep groundwater well in the southern portion of the service area. The well site is currently being investigated and the project is currently in the planning stage. The new well is anticipated to be constructed and operational by the end of 2012.

Section 5 – Water Supply Reliability and Water Shortage Contingency Planning

Section 5 discusses and compares EGWD's future projected water demands versus available water supplies; presents the overall water supply reliability in regards to dry years and emergency water shortage conditions; and presents EGWD's Water Shortage Contingency Plan, which outlines the actions for EGWD's board to take when water reduction policies are required.

5.1 Water Supply Reliability

The water supplies available to the EGWD consist of groundwater pumping and the purchase of conjunctive use water from SCWA. As previously discussed in Section 4, EGWD pumps groundwater from the Central Basin. The Central Basin has been extensively studied and modeled as presented in the CSCGMP. One goal of the CSCGMP was to model the groundwater basin and to determine and establish a sustainable annual groundwater yield. The regional sustainable annual pumping amount of 273,000 AF was agreed to by the stakeholders that utilize groundwater from the Central Basin. The CSCGMP provides for the long-term protection of groundwater quantity and quality within the region, and contains policies directing the development of surface water supplies, conservation, and other measures to service urban development as it occurs, thereby protecting the sustainable annual groundwater yield. Of this sustainable yield, EGWD is allotted approximately 8,000 AFY to service its customer base. **Figure 5** provides an illustration of the groundwater elevations that have been stable or increasing in most wells surrounding EGWD. **Appendix I** presents the same figure in a larger scale.

The CSCGMP is the result of the Water Forum process, a long effort involving multiple agencies and stakeholders within the region, and culminated in the negotiation and signing of the Water Forum Agreement. In 1995, the Water Forum was created by City and County of Sacramento in an attempt to develop programs that focused on maintaining a long-term plan for a number of factors that mainly consisted of a developing a sustainable yield of groundwater, conservation and responsible planning for surface water, and the protection of the American River watershed. The Water Forum was signed by 40 stakeholders in April 2000. The stakeholders consist of mainly water purveyors, agriculturalists, business leaders, and environmentalists.

Zone 40 provides wholesale water to the Tariff Area No. 2 portion of the EGWD service area. The wholesale agreement is based upon the terms of the First Amended and Restated Master Water Agreement between SCWA and EGWW, which was executed in the mid 1990's. The agreement was assumed by FRCD when it purchased EGWW. The original agreement was developed to provide a way for new development in the FRCD/EGWD service area to access new water supplies being developed through the Zone 40 conjunctive use program.

FRCD/EGWD agreed to purchase water from SCWA to serve its expanded retail area (Tariff Area No. 2). New development within the Tariff Area No. 2 is required to pay the Zone 40 Development Fee for new building permits, and a monthly user fee for Zone 40 capital projects, which support conjunctive use in the Central Basin. The EGWD Tariff Area No. 2 area is served by water facilities constructed, maintained, and operated by EGWD. Zone 40's conjunctive use water supply is considered a reliable source as demonstrated by the 2010 SCWA UWMP.

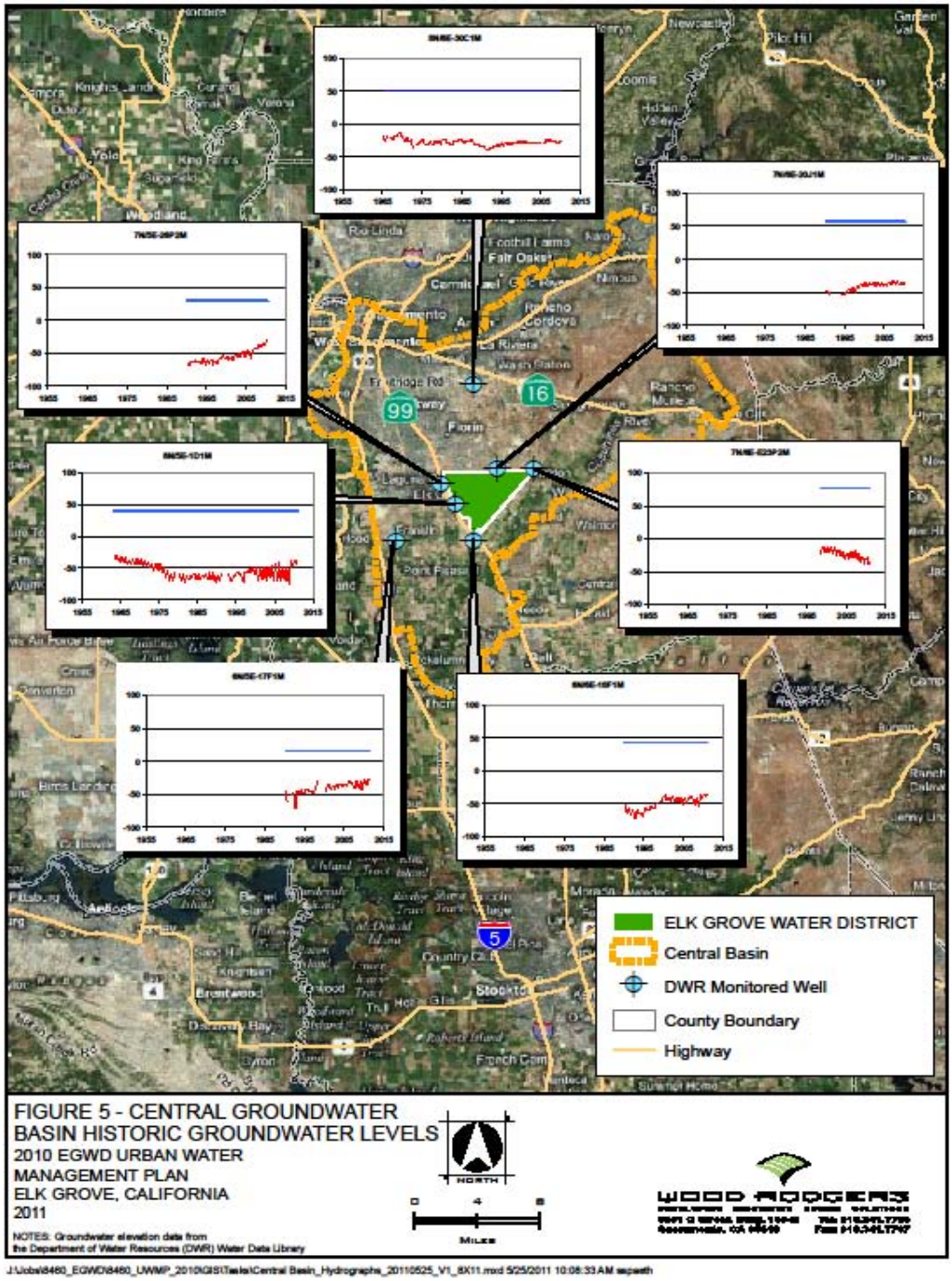


Figure 5 – Central Groundwater Basin Historic Groundwater Levels

Table 33 lists the factors that may affect municipal water supply sources. As previously discussed, EGWD serves its customers with purchased wholesale potable water from SCWA for the Tariff Area No. 2 service area and serves the Tariff Area No. 1 service area by groundwater wells owned and operated by EGWD. There are no water supply limitations in regards to legal contracts, environmental constraints, water quality issues, or climate conditions.

Table 33 – Factors Resulting in Inconsistency of Supply

Water Supply Sources[1]	Specific Source Name, if Any	Limitation Quantification	Legal	Environmental	Water Quality	Climatic	Additional Information
SCWA	Tariff Area No. 2	See Note[2]	None	None	None	None	None
Groundwater	Tariff Area No. 1	8,000[3]	None	None	None	None	None

[1]Volume is in AFY.
[2]Agreement does not list a specific limitation per the SCWA UWMP, there is 100% reliability.
[3]Per analysis of sustainable yield prepared through the Water Forum.

For the purposes of this document, the term average year is a representative year or range of years that represents the median runoff levels and patterns that affect EGWD's water supply. Single-dry year represents the lowest annual runoff within EGWD's watershed since 1903. The multiple-dry year period is considered the lowest average runoff for a conservative range of three or more years. **Table 34** documents the reliable water supply available to EGWD's service area for average years and multiple dry years.

Table 34 – Supply Reliability – Current Water Sources

Water Supply Sources	Average / Normal Water Year Supply[1]	Multiple-Dry Water Year Supply[1]		
		Year 1	Year 2	Year 3
SCWA	As Needed	As Needed	As Needed	As Needed
Groundwater	8,000	8,000	8,000	8,000
Percent of Normal Year:	100%	100%	100%	100%

[1]Volume is in AFY.

5.2 Water Quality

EGWD receives potable water from separate sources to serve Tariff Area No. 1 and Tariff Area No. 2. Tariff Area No. 1 is served solely from a series of groundwater wells within the Tariff Area No. 1 service area. These wells consist of four deep wells and three shallow wells. The shallow wells pump from the upper South American Subbasin, which tends to require the treatment for arsenic and magnesium. The deep wells penetrate into the deeper aquifer where

water quality is relativity good and treatment is typically not necessary. Water quality is not seen as an issue on the reliability of the groundwater supply. **Table 35** depicts that there are no impacts due to the water quality of the pumped groundwater and water supplied by SCWA. This table was included in the UWMP to be consistent with the Guidebook. SCWA does not identify any water quality issues that would impact water supply for Tariff Area No. 2.

Table 35 – Water Quality – Current and Projected Water Supply Impacts

Water Source	Description of Condition	2010	2015	2020	2025	2030	2035 Optional
SCWA		N/A	N/A	N/A	N/A	N/A	N/A
Groundwater	Arsenic, Magnesium, etc.	N/A	N/A	N/A	N/A	N/A	N/A

Note: All treated water meets current and anticipated CDPH standards.

5.3 Drought Planning

California and the Sacramento Valley experienced a severe drought from 1987 to 1992. The regional drought resulted in low water levels in area reservoirs and temporary declining groundwater elevations in the Central groundwater basin, which is also referred to as the South American Subbasin, according to DWR's Bulletin 118.

In the Sacramento County area, specific historical drought years are referenced in regards to a single-dry and multiple-dry years. These represent past years where drought conditions were experienced. **Table 36** identifies the years for a typical average water year, a single-dry water year, and years that represent a multiple year period where drought conditions were in effect.

The Act requires water providers to evaluate their water supplies for the next three years assuming that the years constitute multiple dry years. EGWD relies on groundwater supply for Tariff Area No. 1. SCWA relies on groundwater for service to Tariff Area No. 2. This section of the Plan presents data for the water supply during these types of events. Assuming that 2011, 2012, and 2013 were equivalent to the three driest years as in 1987 thru 1990, EGWD and SCWA are equipped to meet 100% of the Tariff Area No. 1 and Tariff Area No. 2 water demands using existing groundwater supply sources. The data is presented in the following tables in this section.

Table 36 – Basis of Water Year Data	
Water Year Type	Base Year(s)
Average Water Year	1981
Single-Dry Water Year	1977
Multiple-Dry Water Years	1987-1990

Table 37 presents the reliable water supply source during multiple–dry water years for Tariff Area No. 1 and Tariff Area No. 2. SCWA is to provide the necessary water needed to serve Tariff Area No. 2.

Table 37 – Supply Reliability – Historic Conditions					
Average / Normal Water Year	Single-Dry Water Year	Multiple-Dry Water Years			
		Year 1	Year 2	Year 3	Year 4
8,000 (Tariff Area No. 1)	8,000	8,000	8,000	8,000	8,000
As Needed (Tariff Area No. 2)	As Needed	As Needed	As Needed	As Needed	As Needed
Percent of Average/Normal Year	100%	100%	100%	100%	100%

As discussed in the water supply reliability section, EGWD has a number of deep groundwater wells that are able to produce reliable potable water during multiple dry years. As shown in **Table 38**, EGWD does not have a water supply deficiency with respect to annual usage for Tariff Area No. 1 water demands through 2035.

Table 38 – Supply and Demand Comparison (Tariff Area No. 1) – Normal Year					
	2015	2020	2025	2030	2035 Optional
Supply Totals	6,205	5,940	5,940	5,940	5,940
Demand Totals	6,205	5,940	5,940	5,940	5,940
Difference	0	0	0	0	0
Difference as % of Supply	0	0	0	0	0
Difference as % of Demand	0	0	0	0	0
[1]Volume is expressed in AFY.					

Table 39 presents the supply and demand projections for Tariff Area No. 2 during normal precipitation years.

Table 39 – Supply and Demand Comparison (Tariff Area No. 2) – Normal Year					
	2015	2020	2025	2030	2035 Optional
Supply Totals	3,570	3,640	4,100	4,560	4,560
Demand Totals	3,570	3,640	4,100	4,560	4,560
Difference	0	0	0	0	0
Difference as % of Supply	0	0	0	0	0
Difference as % of Demand	0	0	0	0	0
[1]Volume is expressed in AFY.					

EGWD Tariff Area No. 1 is capable of providing the required water supply to meet the demands for a representative single-dry year as shown in **Table 40**.

Table 40 – Supply and Demand Comparison (Tariff Area No. 1) – Single-Dry Year					
	2015	2020	2025	2030	2035 Optional
Supply totals[1]	6,205	5,940	5,940	5,940	5,940
Demand Totals[1]	6,205	5,940	5,940	5,940	5,940
Difference	0	0	0	0	0
Difference as % of Supply	0	0	0	0	0
Difference as % of Demand	0	0	0	0	0
[1]Volume is expressed in AFY.					

Table 41 presents the supply and demand projections for Tariff Area No. 2 during a typical single-dry precipitation year.

Table 41 – Supply and Demand Comparison (Tariff Area No. 2) – Single-Dry Year					
	2015	2020	2025	2030	2035 Optional
Supply totals[1]	3,570	3,640	4,100	4,560	4,560
Demand Totals[1]	3,570	3,640	4,100	4,560	4,560
Difference	0	0	0	0	0
Difference as % of Supply	0	0	0	0	0
Difference as % of Demand	0	0	0	0	0
[1]Volume is expressed in AFY.					

Table 42 presents the Tariff Area No. 1 groundwater supply and the associated demands during multiple-dry years. Due to the deep groundwater wells within Tariff Area No. 1, EGWD does not foresee a water supply shortfall with respect to the anticipated future water demands.

Table 42 – Supply and Demand Comparison (Tariff Area No. 1) Multiple-Dry Year Events						
		2015	2020	2025	2030	2035 Optional
Multiple-Dry Year First Year Supply	**Supply Totals**[1]	**6,205**	**5,940**	**5,940**	**5,940**	**5,940**
	Demand Totals[1]	**6,205**	**5,940**	**5,940**	**5,940**	**5,940**
	Difference	0	0	0	0	0
	Difference as % of Supply	0	0	0	0	0
	Difference as % of Demand	0	0	0	0	0
Multiple-Dry Year Second Year Supply	**Supply Totals**[1]	**6,205**	**5,940**	**5,940**	**5,940**	**5,940**
	Demand Totals[1]	**6,205**	**5,940**	**5,940**	**5,940**	**5,940**
	Difference	0	0	0	0	0
	Difference as % of Supply	0	0	0	0	0
	Difference as % of Demand	0	0	0	0	0
Multiple-Dry Year Third Year Supply	**Supply Totals**[1]	**6,205**	**5,940**	**5,940**	**5,940**	**5,940**
	Demand Totals[1]	**6,205**	**5,940**	**5,940**	**5,940**	**5,940**
	Difference	0	0	0	0	0
	Difference as % of Supply	0	0	0	0	0
	Difference as % of Demand	0	0	0	0	0
[1]Volume is in AFY.						

Table 43 shows the reliable water supply from SCWA for Tariff Area No. 2 during a multiple-dry precipitation years.

Table 43 – Supply and Demand Comparison (Tariff Area No. 2) Multiple-Dry Year Events						
		2015	2020	2025	2030	2035 Optional
Multiple-Dry Year First Year Supply	**Supply Totals**[1]	**3,570**	**3,640**	**4,100**	**4,560**	**4,560**
	Demand Totals[1]	**3,570**	**3,640**	**4,100**	**4,560**	**4,560**
	Difference	0	0	0	0	0
	Difference as % of Supply	0	0	0	0	0
	Difference as % of Demand	0	0	0	0	0
Multiple-Dry Year Second Year Supply	**Supply Totals**[1]	**3,570**	**3,640**	**4,100**	**4,560**	**4,560**
	Demand Totals[1]	**3,570**	**3,640**	**4,100**	**4,560**	**4,560**
	Difference	0	0	0	0	0
	Difference as % of Supply	0	0	0	0	0
	Difference as % of Demand	0	0	0	0	0
Multiple-Dry Year	**Supply Totals**[1]	**3,570**	**3,640**	**4,100**	**4,560**	**4,560**

Table 43 – Supply and Demand Comparison (Tariff Area No. 2) Multiple-Dry Year Events						
Third Year Supply	**Demand Totals**[1]	**3,570**	**3,640**	**4,100**	**4,560**	**4,560**
	Difference	0	0	0	0	0
	Difference as % of Supply	0	0	0	0	0
	Difference as % of Demand	0	0	0	0	0
[1]Volume is in AFY.						

5.4 Water Shortage Contingency

EGWD adopted a Water Shortage Ordinance (Ordinance 06-21-06-01) in 2006, after the adoption of the 2005 EGWD UWMP. The Water Shortage Ordinance was updated in 2010 (Ordinance 04-28-10-01) to align with the water prohibition stages of other local water agencies. The Water Shortage Contingency Plan allows the FRCD Board to implement a Water Shortage Conservation Plan when it has been deemed necessary. A copy of the ordinance is presented in **Appendix J**.

EGWD has established financial reserves available to assist with dealing with water supply shortage contingencies, if needed. The reserve fund may also assist EGWD during mild summers if water use is lower than normal and does not create normal revenues as historically has been the case. The most significant revenue impact would be in the case of a catastrophe where water shortage would reduce revenue and possible damaged infrastructure would increase maintenance costs. At this point, EGWD would look to possibly increase water rates and look to local, state, and federal agencies for disaster relief grants and or loans.

Table 44 shows the stages of water rationing that are implemented by EGWD's Board during multiple-dry water years. These stages are consistent with the information included in the Water Shortage Contingency Plan Ordinance.

Table 44 – Water Shortage Contingency – Rationing Stages to Address Water Supply Shortages		
Stage No.	Water Supply Conditions	% Shortage
1	15% Shortage	15%
2	15-25% Shortage	15-25%
3	25-35% Shortage	25-35%
4	35-50% Shortage	35-50%
5	Greater than 50% Shortage	> 50%

Table 45 outlines the water use prohibitions and related stages when the prohibitions are implemented. These measures are consistent with Water shortage Contingency Plan of the SCWA.

Table 45 – Water Shortage Contingency – Mandatory Prohibitions	
Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Using Potable Water for Street Washing	5
Washing Personal Vehicles	5
Irrigating Residential Lawns and Landscape	5
Excessive Water Use (Runoff in Gutters)	5
Other – Restaurants Shall Serve Water to Customers Upon Request	5
Other – Ponds, Fountains, and Pools Shall be Equipped with Recirculating Pumps	1

Table 46 is an estimate of the water savings when the five water shortage contingency stages are implemented.

Table 46 – Water Shortage Contingency – Consumption Reduction Methods		
Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Water Rationing	1	15
No New Water System Connections	2	15 - 25
Limit Landscape Irrigation to Once per Week	3	25 - 35
Prohibit Landscape Irrigation	4	35 - 50
Mandatory Prohibition on Water Use	Final	50 or more

EGWD's Ordinance 06-22-11-01 states the financial penalties for excessive water use when the ordinance is in effect. These violations are presented in **Table 47.**

Table 47 – Water Shortage Contingency – Penalties and Charges	
Penalties or Charges	Stage When Penalty Takes Effect
$100 fine per violation.	Stage 1 – Third Violation
$200 fine and customer scheduled for water audit.	Stages 2 thru 5 – Third Violation
$500 fine and a flow restriction device installed.	Stages 2 thru 5 – Fourth Violation
$500 fine and water service is shut off. Connection fee assessed to re-activate water service.	Stages 2 thru 5 – Fifth Violation

An aspect of the overall water shortage contingency plan is be prepared for an unforeseen large scale water service interruption such as a flood, regional power outage or possible large fire that

inhibits wells or the treatment plant from operating. To prepare for these types of major water supply interruptions, EGWD has prepared or participated in the following:

- Participated in regional Disaster Preparedness Plans
- Performed Water System Vulnerability Assessment
- Updated Emergency Response Plan

EGWD also has the following infrastructure to assist in supplying water in case of a catastrophic event:

- Emergency back-up diesel generators at major facilities. Portable generators are also available to be moved to facilities, as needed.
- Aboveground water storage tanks are designed to hold emergency water supplies in case of emergencies.
- Water main intertie connections with SCWA, which allows water to flow between service areas.

Section 6 – Demand Management Measures (DMMs)

6.1 Demand Management Measures

EGWD is a member of the California Urban Water Conservation Council (CUWCC). The CUWCC was created to increase efficient water use statewide through urban water agencies partnerships, public interest organizations, and private entities. The CUWCC's overall mission is to integrate urban water conservation practices into the planning and management of California's water resources. The EGWD joined in November of 2009. This UWMP provides the required information for the implemented and non-implemented DMMs. **Table 48** lists each measure and whether EGWD is either currently implementing or plans to implement in the next five years, or does not plan on implementing it in the next five years. Each DMM discusses the steps needed for implementation, marketing the DMM, the schedule of implementation, if applicable, and in some cases, the projected water savings due to the DMM implementation. FRCD/EGWD has a conservation coordinator on staff that oversees implications of the DMMs.

Table 48 – Elk Grove Water District DMMs

DMM	Description	Current Implementing or Planning to Implement in Next Five Years (Y/N)
A	Water Survey Programs for Single-Family and Multi-Family Residential Customers	Y
B	Residential Plumbing Retrofit	Y
C	System Water Audits, Leak Detection, and Repair	Y
D	Metering with Commodity Rates for all New Connections and Retrofit of Existing	Y
E	Large Landscape Conservation Programs and Incentives	Y
F	High-Efficiency Washing Machine Rebate Programs	N
G	Public Information Programs	Y
H	School Education Programs	Y
I	Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts	Y
J	Wholesale Agency Assistance Programs	N/A
K	Retail Conservation Pricing	Y
L	Conservation Coordinator	Y
M	Water Waste Prohibition	Y
N	Residential Ultra Low-Flush Toilet Replacement Programs	N

6.2 Evaluation of DMMs Being Implemented

This section discusses the DMMs that EGWD currently implements or plans to implement within the next five years. Section 6.3 addresses those DMMs not planned to be implemented by EGWD in the next five years.

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

EGWD and SCWA offer water survey audit programs for inside and outside water usage for residential customers, beginning in 2004. The inside water survey program consists of performing leak detection surveys for faucets and toilets. The outside survey consists of inspecting and providing recommendations for residential landscape irrigation service with respect to leaking systems, programming irrigation timers, and landscape irrigation system flaws.

SCWA has contracted with Irrigation Consultation and Evaluation (I.C.E.) to perform interior and exterior water surveys upon request for EGWD customers. The water audit provides the customer with the survey evaluation results and water-saving recommendations. These audits review the operational aspects for landscape water timers and overall irrigation system operations. The audit provides information to the customer to assist with the water-wise irrigation practices for its residential landscape areas. I.C.E. also will inspect for water leaks and offers a custom irrigation schedule along with water-saving tips specific to the customer's property. I.C.E. provides a copy of its recommendations to EGWD so its conservation coordinator can further assist customers with their conservation goals. While it is not mandatory to implement the recommendations, I.C.E. provides this service hoping the customers take their recommendations into consideration to increase water efficiency. Following is a discussion of the marketing, implementation, schedule, effectiveness, and water savings estimate for this DMM.

Marketing DMM

Residential indoor and outdoor water audits are presented on both SCWA's and EGWD's Websites under the conservation sections. Audits have been promoted in the local newspaper and EGWD's customer service representatives continually recommend the service to customers looking for ways to reduce their water bill. EGWD's conservation coordinator and customer service representatives promote this program to all customers as part of their daily job tasks.

Steps Necessary to Implement

EGWD, in conjunction with SCWA, is currently implementing this DMM.

Schedule of Implementation

EGWD intends to update its residential water use efficiency program by the first board meeting in January 2012. The EGWD plans to aim for a minimum combined 1.0% per year in-house and landscape audits starting January 2012 to January 2015. This equates to approximately 120 audits per year. After this time, EGWD intends to evaluate the progress of the program and make necessary changes to ensure the program's goals are being met.

Method for Evaluation of Effectiveness

EGWD has tracked the number of audits performed in the past. Approximately 190 audits have been performed from 2004 to 2011. The EGWD plans to continue tracking and setting goals for the number of annual audits performed for both single-family and multi-family customers. For metered residences, EGWD plans to compare residential water uses yearly for a sampling of residences that participate in the residential and landscape surveys compared to their historic water usage.

Estimated Water Savings

Because many of the audits were performed on unmetered homes, EGWD is unable to track direct improvements on water efficiency post-irrigation reviews. However, a single leak in an irrigation system can lose 2,700 gallons a week (source: I.C.E.). As most irrigation occurs between May and October; over 75,000 gallons can be lost on a single irrigation leak during that time period (not accounting for the rest of the calendar, if the homeowner leaves the irrigation system on year-round). A conservative estimate is that a leak is located in two-thirds of the audits. Over the seven years in which EGWD has offered landscape irrigation surveys, it is estimated that approximately 4.3 acre-feet of water have been saved annually, or 30 acre-feet over the program's seven years. With continued effectiveness in implementation, the program could result in a 0.3% to 0.5% decrease in the baseline gpcd over a 10-year period.

6.2.2 DMM B: Residential Plumbing Retrofit

EGWD offers free plumbing retrofit kits. Due to budget constraints, EGWD discontinued purchasing new items for the program in 2009, though they still have a stock of shower heads. The City of Elk Grove enforces the use of water conservation plumbing fixtures, including ultra low-flush toilets (ULFT) and low-flow shower heads, in all new construction. Retrofit kit purchases will be included in the 2011-2012 budget recommendations. These kits will be offered to homes that receive new meters and would be on a first-come, first-serve basis. Following is a discussion of the marketing, implementation, schedule, effectiveness, and water savings estimate for this DMM.

Marketing DMM

EGWD's Website contains information regarding the status of the plumbing retrofit program. EGWD intends to continue to include messages on customer billing statements that reference the available plumbing retrofit kits.

Steps Necessary to Implement

EGWD plans to enhance its residential plumbing retrofit program for the replacement of water-efficient plumbing fixtures to include shower heads, aerators, positive shut-off hose nozzles, and leak tablets.

Schedule of Implementation

EGWD plans to continue its existing program and aim for a retrofit of 1.0% of the customer base per year starting January 2012. The kits are kept at EGWD's office and are available upon request. They are also distributed to all homes when they receive a meter retrofit.

Method for Evaluation of Effectiveness

EGWD estimates that it distributed 589 retrofit kits during the 2009-2010 Fiscal Year. A random selection of these homes was compared against a control set of similar residences, but no major difference in usage has been detected. EGWD believes that only a small percentage of the retrofit kits distributed were actually used.

Estimated Water Savings

EGWD estimates that a residential customer with replacements of one shower head may expect to save approximately 12 gallons a day per shower. This is equivalent to approximately a 5% reduction in water use for a typical residential customer per day. Based upon retrofitting 120 residences a year, this equates to approximately 1.5 acre-feet per year reduction, or 15 acre-feet over 10 years. With continued effectiveness in implementing, the program could result in a 0.1% to 0.15% decrease in the baseline gpcd over a 10-year period.

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

Currently, the EGWD owns a flow recorder or Meter Master that is used, upon a customer's request, to determine if a customer has a leak past the meter location. The flow recorder is connected on both sides of the meter and records any flow that crosses the meter. The recorder can tell the difference between a running toilet, dripping faucet, or leaking irrigation valve.

EGWD is in the process of more fully implementing this DMM. Following is a discussion of the implementation, schedule, effectiveness, and water savings estimate for this DMM.

Steps Necessary to Implement

EGWD is utilizing GIS to track the locations and frequencies of leaks in different areas within their service area. This information will be utilized to develop a system approach to focusing on these areas for leak audits and/or pipe replacement programs. EGWD is continuing efforts to complete its meter retrofit program by 2015. Once meters are installed, it will be easier to troubleshoot where leaks are occurring.

EGWD needs to decide whether to purchase the required equipment and complete leak detection audits in-house, or hire an outside consultant. As it develops its CIP program, it also needs to identify funding levels for the program.

Schedule of Implementation

Tariff Area No. 2 consists of piping that is 10 years or less, and installed and inspected to modern standards. Therefore, there is less likelihood of significant leakage in this area, and EGWD will continue to focus on the older sections of Tariff Area No. 1 as it develops this DMM.

EGWD intends to continue to strategize on how to best implement this DMM as the meter retrofit program continues.

Method for Evaluation of Effectiveness

The best way to evaluate the effectiveness of this program is to compare water production data with water consumption from customers. This will be possible upon completion of the meter retrofit program.

Estimated Water Savings

As a rough estimation, EGWD may be able to reduce annual water consumption by 3% in Tariff Area No. 1 over a several year period. This would equate to a savings of approximately 189 AF.

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

EGWD requires a water meter for new service connections. Water meter billing is a water efficiency tool that assists the customer's knowledge of personal water use, and helps to identify water leaks and in establishing a rate that encourages conservation. EGWD is also implementing a mandated program by the State of California that requires EGWD to convert the existing flat fee customers to metered billing by 2025. Of the total 12,046 connections, 7,313 are metered. By 2015 all connections are planned to be metered.

EGWD currently has a two-tiered billing rate scale for residential and commercial customers. The district's service area is fully metered in Tariff Area No.2, and approximately 35% of the customers in Tariff Area No. 1 are not metered. According to EGWD's Water Rate Schedule from Ordinance 04-28-10-01, the following are the tiered rates for metered water connections.

Residential Usage:		***Per Meter, Per Month***
First 3,000 cu. ft. per 100 cu. ft	=	$1.46
Over 3,000 cu. ft. per 100 cu. ft.	=	$1.80

Non-Residential Usage:		***Per Meter, Per Month***
First 3,000 cu. ft. per 100 cu. ft	=	$1.46
Over 3,000 cu. ft. per 100 cu. ft.	=	$1.80

Following is a discussion of the implementation, schedule, effectiveness, and water savings estimate for this DMM.

Steps Necessary to Implement

EGWD is currently implementing the meter replacement program, and a two-tiered billing rate schedule. EGWD does not plan to change these programs within the next five years, but may give this further consideration during a Rate Study planned to occur in 2012.

Schedule of Implementation

EGWD is scheduled to convert approximately 1,200 flat fee customers to meters per year until the EGWD service area is fully metered in 2015.

Method for Evaluation of Effectiveness

The effectiveness of the tiered water rate billing and meter replacement program are proven methods to reduce customer water use. The EGWD has the ability to revise water rates based upon volumetric use if deemed necessary in the future. The effectiveness of the program is measured by comparing current customer billings to historical billings.

Estimated Water Savings

Meter retrofits combined with the volumetric rates are estimated to result in a 10% water use reduction for the retrofitted customers. With approximately 4,800 existing customers to convert to meters, the EGWD expects to see a water reduction of approximately 375 acre-feet per year for the existing non-metered customer base upon completion of the meter retrofits.

6.2.5 DMM E: Large Landscape Conservation Programs and Incentives

EGWD provides guidelines and information to non-residential customers with support and incentives to improve its large-scale landscape water-use efficiency. In addition, landscape water-use efficiency information is provided to all new customers. The EGWD plans to identify the non-residential customers who currently do not have meters and provide a plan to implement the meter retrofit program. The EGWD encourages local parks and nurseries to promote the use of low water-use plants, and currently serves approximately 17 public parks that are two acres or larger. A 21-acre park is under construction and a small, one-acre park is getting a three-acre extension. Upon build-out of the EGWD service area, a total of 18-20 public parks are estimated

to be constructed. Several parks, schools, and churches have already been retrofitted. Following is a discussion of the implementation, schedule, effectiveness, and water savings estimate for this DMM.

Steps Necessary to Implement

EGWD plans on continuing to meet with and discuss conservation practices with the Elk Grove Community Services District (EGCSD) staff that are responsible for the park maintenance. EGWD plans to offer to perform landscape audits with the EGCSD on a yearly basis.

Schedule of Implementation

EGWD intends to meet with the EGCSD staff once a year between April 1 and May 1 starting April 2012, to discuss the large landscape conservation programs under this demand management measure.

Method for Evaluation of Effectiveness

The effectiveness of the program will be measured by comparing future meter billing amounts with historical billings to the same large landscape customers.

Estimated Water Savings

EGWD currently does not have an estimate of the water savings for this program.

6.2.6 DMM G: Public Information Programs

EGWD provides public information programs mainly through its active participation with the efforts of the RWA. The RWA has implemented a regional water conservation program for the past 10 years. In 2001, a full-time staff person was hired by RWA. In subsequent years, the Regional Water Efficiency Program (RWEP) has been supported through member dues and federal and state grant funds. EGWD fully participates in the RWEP Public Information Campaign. The overall goal of the RWEP is to maximize customer participation in water conservation programs. Historically and for the foreseeable future, the regional public information and school education program elements include: school outreach materials and presentations, media advertising campaigns, commercial consumer outreach, promotional materials, community events and fairs, evapotranspiration data availability, a website, and allied organizations outreach.

In 2010, the RWA and 19 local water providers announced a new public outreach and advertising campaign called "Blue Thumb." The campaign is designed to help residents use less water outdoors. With the Sacramento region's hot, dry climate and long summer season, more than 65% of a household's yearly water consumption typically goes toward landscape irrigation. Of that, 30% is lost due to overwatering or evaporation, and is the target of the campaign messaging with the call for customer behavioral changes in watering practices. Following is a discussion of the marketing, implementation, schedule, effectiveness, and water savings estimate for this DMM.

Goals for the Regional Public Information Campaign

- Raise awareness about the need to use water efficiently outdoors.
- Motivate target audience to undertake key behaviors that are most likely to reduce outdoor water use.

The ongoing regional campaign shows residents how to use water efficiently outdoors through everyday tasks such as adjusting their irrigation system according to the season or using a shut-off nozzle on their hose. The Blue Thumb Campaign has a Website (BeWaterSmart.info) where visitors can take the pledge to use water wisely and view video clips from spokespersons, such as Sacramento Mayor Kevin Johnson, and campaign participants explaining how they earned their Blue Thumb. The website has been expanded to be a more comprehensive water conservation related site.

In the future, EGWD and RWA will continue to work with participating agencies on a regional outreach message appropriate for the current year's water outlook. EGWD and RWA intends to continue on providing key messages and update water provider tools as necessary, track the number of media stories (or hits), interviews conducted, and number of impressions of audience viewings.

Tracking and Results of Participation

After the first year of the "Blue Thumb" program, results were tracked for 2010 and include the following outcomes:

- Nearly 30 earned media hits covering topics such as the campaign announcement/search for residents to participate, campaign launch, Home Depot events/Water Awareness Month, and Blue Thumb Website pledge.

- Interviews on multiple public service radio programs, including Clear Channel (where the host even took the Blue Thumb pledge on the air!), which broadcasts on five local stations and family radio, and aired on two local stations.

- Nearly 3.9 million impressions via paid television advertising and 6.3 million impressions via paid radio advertising.

- More than 1.2 million impressions for the (no-cost) television Public service Announcement (PSA) (worth an estimated $24,500) and over 3 million impressions for the radio PSA (worth an estimated $96,264).

Planned Implementation Schedule

The general schedule for the regional public information campaign follows the annual calendar with the following seasonal activities:

- Winter – Planning for upcoming year's activities and continuing to promote participation in RWA's programs.

- Spring – Ramping up messaging and strong focus in soliciting media coverage and paid advertising in support of May as Water Awareness Month. Messaging surrounds the traditional spring planting season and checking of irrigation systems as they are turned on and taking the "Blue Thumb Pledge" to lower outdoor water use this season.

- Summer – Key messaging hits on the issues of efficient irrigation techniques, avoiding water waste, and lowering peak demands on hot summer days.

- Fall – Participating in local Harvest Day events and providing efficient landscape irrigation trainings for professionals that focus on selecting more water efficient plants and irrigation equipment, and when the weather cools and rains return, then messaging calls for shutting down irrigation systems for the winter months.

The implementation schedule for 2011-2015 includes plans to continue to promote water conservation through the RWEP's outreach program supplemented by EGWD's outreach efforts. In addition, EGWD will continue to support community events similar to those conducted in the past, as described above.

RWA's annual budget for direct expenses to continue with the regional outreach campaign is planned for 2011-2015 to be approximately $160,000 each fiscal year.

Method for Evaluation of Effectiveness

EGWD and RWA plan to conduct an evaluation on a minimum of a bi-annual basis to determine the campaign's effectiveness using the following means:

- Website analytics analysis.
- Tracking water provider materials that carry Blue Thumb messages.
- Media and online mentions and content analysis of hits.
- Impressions for television and radio advertising and public service announcements.
- Impressions for partner activities (such as the Sacramento River Cats).
- For the Community Based Social Marketing Program: Internet/written surveys (and potentially informal phone interviews) and water use data tracking.

In the future, RWA will conduct another random survey of Sacramento area residents, which will seek to measure if the following goals for the campaign are being achieved:

- Increase the number of residents willing to utilize various yard design and maintenance practices promoted by the campaign.
- Increase the number of residents who say they have adopted yard design and maintenance practices promoted by the campaign.
- Increase the number of residents that have seen, read, or heard news stories, public information, advertisements, or other messages regarding water efficiency in the past six months.
- Increase the number of residents naming key messages promoted by the campaign in verbatim responses about the advertising or messages they heard.

Based upon the results of the post-campaign survey, EGWD and RWA are expecting to measure the success of this DMM based upon the metrics listed above.

If the campaign is not proving effective based upon these metrics, then RWA will update or revise the campaign, or if necessary begin a new campaign, to garner more customer participation.

Estimated Water Savings

There is no current method in the industry to evaluate water savings for this program.

The popularity of public programs can be measured through the acceptance of brochures and attendance at various water conservation related events, etc.

6.2.7 DMM H: School Education Programs

The EGWD currently implements a regional school education program known as the RWEP School Education Program. The RWEP program has focused mainly on K-8 programs. RWEP has continued to use the legacy Sacramento Bee Newspapers in Education, now called Media in Education (MIE) program that originated back in the mid-1990s as part of the Sacramento Area Water Works Association Program, in order to meet the baseline requirements for school education outreach. It includes an annual Water Conservation Pledge and Quiz Contest.

Historically between 2004 and 2008, RWEP also sponsored the Great Water Mystery School Assembly Program that was co-funded with the Sacramento Stormwater Quality Partnership. Over the years, a total of 60,208 Sacramento County students in Grades 3-6 were educated about the benefits of better water management practices at home to save water resources and reduce polluted storm water runoff.

In Fiscal Year 2011, RWEP embarked on a new program, in partnership with the Bureau of Reclamation's American River Water Education Center and the Water Education Foundation, to include sponsorship of Project Water Education for Teachers (WET) workshops. A total of 25 teachers attended the first workshop in April 2011. Following is a discussion of the marketing, implementation, schedule, effectiveness, and water savings estimate for this DMM.

Steps to Implement

The RWEP is in the process of evaluating whether a more effective school program is warranted that will reach more students. Working with the RWEP members and local educators, RWA plans to: (1) evaluate the existing program; (2) evaluate the success of other programs in the region and around the state; (3) develop objectives

and a target audience (e.g., grade level); (4) provide materials; and (5) implement a strategy for the school education program into the future.

Marketing Strategy

The current marketing strategy for the SacBee MIE program is to email teachers that have participated in the past, and conduct a direct mail campaign to local schools for the whole series of topics throughout the year. Each teacher decides on which week's topics to participate in that cover a wide range of education topics including RWEP's sponsored week of "Be Water Smart News, Water the Never Ending Story."

RWA continues to track by a variety of means participation in the regional school education program. For the Sacramento Bee MIE Program, the metrics tracked annually include:

- Number of teacher guides downloaded.
- Number of schools.
- Number of classrooms.
- Number of students reached.
- Number of students participating in the pledge (Grades K-3) or contest (Grades 4-8) entries received by the Sacramento Bee.
- Comments from teachers.

Planned Implementation Schedule and Budget

RWEP plans to continue with regional school education program activities along with the distribution of school-age educational materials and Project WET Workshops. The school schedule dictates when participation in the RWEP school education program occurs and follows the months that schools are in session from August to the following May.

The annual budgeted direct expenses for EGWD's portion of the regional school education program have been $20,000, and will continue at this level for the foreseeable future.

Method for Evaluation of Effectiveness

Based upon the annual results of the participation levels tracked, EGWD and RWA are expecting to measure the success of this DMM based on the metrics listed above. As described above, EGWD and RWA are currently conducting an evaluation process of the existing regional school education program, which includes interviews of local school teachers at a variety of grade levels. The program will continue as currently planned until the evaluation process is complete and the program's content and/or implementation strategy may be revised in the future.

Estimated Water Savings

EGWD currently does not have an estimate of the water savings for this program.

6.2.8 DMM I: Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts

CII water demands are estimated to make up approximately 5% of EGWD's existing water demand and approximately 5% of the overall customer connections for Tariff Area No. 1 and Tariff Area No. 2. EGWD does not serve a large CII land use base. The school district and community services district are the most significant CII customers, and the outreach to these customers is covered elsewhere in this document. EGWD currently performs minor recommendations for CII customers with respect to water efficiency practices. CII customers are eligible for all conservation programs offered by EGWD and have taken advantage of these.

In 2004 and 2005, the EGWD received funding from a SRCSD awarded grant fund to retrofit commercial kitchens and cafes with pre-rinse faucets. With the EGWD service area having a relatively small commercial business base with kitchens; EGWD was able to retrofit nearly all the commercial kitchens with the pre-rinse faucets. At this time, EGWD does not see any additional action items specific to this DMM being undertaken in the future, but will continue to evaluate potential programs for implementation. Following is a discussion of the factors affecting implementation, schedule, effectiveness, and water savings estimates for this DMM.

Steps Necessary to Implement

The EGWD plans to continue to offers to review proposed water uses for new CII customers and make recommendations for improving efficiency before completion of the building permit process. EGWD's CII customers have minimal water use.

EGWD has implemented a commercial pre-rinse faucet retrofit program in the recent past and continues to plan to offer this incentive. With the service area consisting of a relatively small commercial restaurant customer base, EGWD estimates that the retrofit program was able to reach a large majority of the commercial customers.

Schedule of Implementation

EGWD plans to continue to offer the current CII surveys to their customers on a first-come first-serve basis.

Method for Evaluation of Effectiveness

EGWD gauges the successfulness of this DMM on the active participation of their CII customers.

Estimated Water Savings

Water savings is difficult to estimate for this measure.

6.2.9 DMM J: Wholesale Agency Assistance Programs

EGWD is a retail water agency and receives assistance from SCWA. SCWA is the largest water purveyor and water wholesaler in the Sacramento area. SCWA provides technical support to EGWD on issues that pertain to both parties. Being a wholesaler to EGWD, it is a beneficial relationship for SCWA to work with EGWD. This DMM is not applicable to EGWD.

6.2.10 DMM K: Retail Conservation Pricing

EGWD continues to implement its water metering retrofit program and tiered billing based upon volumetric water use. Conservation pricing is generally defined as providing economic pricing incentives to customers for the efficient use of water. Conservation pricing requires the water purveyor to measure the volume of water used by the customer in which metered customer connections are necessary for retail conservation rates. Following is a discussion of the implementation, schedule, effectiveness, and water savings estimate for this DMM.

Steps Necessary to Implement

Retail conservation rates are in effect for EGWD. EGWD intends to focus on the meter retrofit program to ensure all connections are converted to the meter billings system. EGWD plans to review its water rate pricing for each customer connection class and evaluate if a price adjustment is required to captivate water supply costs.

Schedule of Implementation

The EGWD plans on continuing with the meter retrofit program and retail pricing as has in the past. A Rate Study is scheduled for 2012; the last Rate Study was conducted in 2007.

Method for Evaluation of Effectiveness

EGWD has performed rate study audits in the past and plans to continue to perform rate study audits to ensure that the customer billing rates are adequate and inline with industry standards. EGWD follows the AWWA guidelines in determining rates.

Estimated Water Savings

Water savings are difficult to estimate for this measure.

6.2.11 DMM L: Conservation Coordinator

FRCD/EGWD has had a Conservation Coordinator since February 2004. This individual has been responsible for all aspects of water conservation duties for the District, as well as the duties of the landscape irrigation auditor as discussed under DMM A. The following is a discussion of the implementation, schedule, effectiveness, and water savings estimate for this DMM.

Steps Necessary to Implement

This DMM has been implemented by the FRCD/EGWD.

Schedule of Implementation

This DMM has been implemented by the FRCD/EGWD.

Method for Evaluation of Effectiveness

FRCD/EGWD intends to clearly define the role, tasks, and expectations of the conservation coordinator.

Estimated Water Savings

EGWD currently does not have an estimate of the water savings for this program.

6.2.12 DMM M: Water Waste Prohibition

Water waste prohibition is an ongoing component of EGWD's water conservation program and goal of the conservation coordinator. Any reported water waste incident receives immediate response from field staff. If water waste is identified, the customer is notified (or a door tag is left at the property) of the violation and follow-up technical assistance is provided.

EGWD's Website has a section for customers and the general public to report water misuse. The categories consist of gutter flooding, over-watering, sprinklers need adjustment, and algae on sidewalk along with a date and time when the observation was made. EGWD uses the language in ordinance 06-22-11-01 to issue warnings and subsequent citations to customers exceeding the conservation constraints. A copy of this ordinance is included in **Appendix K**. Following is a discussion of the implementation, schedule, effectiveness, and water savings estimate for this DMM.

Steps Necessary to Implement

EGWD currently prohibits water misuse by its customers.

Schedule of Implementation

EGWD currently implements water misuse prohibitions.

Method for Evaluation of Effectiveness

Water waste complaints, fines, and service shut-offs are documented and tracked by EGWD.

Estimated Water Savings

Water savings have not been estimated for this measure.

6.3 Evaluation of DMMs Not Planned to be Implemented

EGWD continues to encourage water conservation within its service boundaries area by implementing the DMMs listed in the Act, and as presented by the California Urban Water Conservation Council. Not all of the DMMs are practical for EGWD to implement due to a number of factors. This UWMP performed the CUWCC cost/benefit analysis for these DMMs. The DMMs that are not being implemented and not planned for implementation within the next 5 years, are discussed below.

6.3.1 DMM F: High-Efficiency Washing Machine Rebate Programs

The high-efficiency clothes washers (HECW) DMM is intended to have water providers encourage the use of high-efficiency clothes washing machines with the use of incentives or mandating by ordinances to require the use of HECWs. Incentives may consist of rebates or reduced connection fees. Ordinances may require residential construction for single-family and multi-family housing to meet the WaterSense Specifications in regards to HECWs until a local, state, or federal regulation is passed that requires the use of high efficiency appliances.

EGWD does not offer a high-efficiency washing machine rebate at this time. EGWD has determined that it is not economically viable to provide this program while maintaining reasonable water rates to its customers, which are already among the highest in the region.

It is estimated that any water savings from this program, were it to be implemented, would not be economically offset by a commensurate reduction in water supply projects.

Following is a discussion of the cost/benefit analysis and DMM coverage requirements for this DMM.

Cost/Benefit Analysis

EGWD performed a cost/benefit analysis on HECWs for the EGWD service area. Research estimates that approximately 75% of the available washing machines on the market are Energy Star certified, which has a water factor of 6.0. This DMM requires an efficiency rating of 5.0. In reviewing data from the 2004 American Housing Survey for Sacramento County, approximately 68% of households have clothes washing machines. Using this percentage for the EGWD service area of 12,050 households at the end of 2010, it can be assumed that approximately 8,200 households have washing machines.

Data shows that an average lifespan of a clothes washer is 12 years. With high efficiency clothes washers entering the market in 1993, it can be assumed that the majority of households have purchased new clothes washing machines since 1995. If 70% of these washers are high-efficiency washers of the 8,200 households with clothes washers, it is estimated that approximately 5,740 households have high efficiency washing machines.

EGWD performed a second cost/benefit analysis using the CUWCC BMP Cost Effectiveness tool spreadsheet. Using data from EGWD, the Cost Effectiveness Summary is as follows in respect to EGWD's perspective:

Total Costs = $ 19,850

Total Benefits = $ 8,773

Benefit / Cost Ration = 0.44

Cost of Water ($ per AF) = $ 1,469 per AF

Water Savings (AFY) = 13.5 AFY

The results of the Cost Effectiveness analysis show that this DMM is not cost-effective to implement from the EGWD perspective, but is cost-effective from the public's perspective.

This DMM evaluation takes into account economic and non-economic factors, social factors, and customer impacts. In regards to funding to implement this DMM, EGWD would be required to most likely apply for any available grants or to

raise the current customer water rates. EGWD does have the legal authority to implement this DMM, if it is decided the impacts are acceptable to EGWD.

Funding to construct a new water supply source such as a new groundwater well, pump station, and water quality treatment would be generated by customer water use billings or from reserves. A new groundwater well, pump station, and water quality treatment providing a sustainable yield of 1,800 gpm is estimated to cost approximately $2.5 million dollars. A new water source equates to approximately $860 per AFY based upon construction costs alone. Spread over 10 years, this is equivalent to approximately $90 per AFY based upon construction costs alone.

DMM Coverage Requirements

The DMM suggests that water providers provide a financial incentive for the purchase of HECWs that meet a minimum water factor of 5.0. It is suggested that incentives shall be provided to 0.9% of the current single-family accounts during the first year. After the first year, the incentives should be offered at 1.0% per year for the next 10 years.

A check can be performed to evaluate that the existing customer base currently has HECWs that equate to 1.4% per year of market penetration. This is equal to 1.4% of 12,040 of the current population, or approximately 170 new high-efficiency washing machines per year. According to the previous calculation of a customer base of 5,740 households who currently have a high efficiency washer, it appears that the EGWD service area contains households that meet the requirement of the DMM coverage.

The Sacramento Municipal Utility District provides electrical service to EGWD customers, and offers rebates of up to $125 for those customers with electric water heaters.

PG&E provides gas service to EGWD customers, and offers rebates of up to $50 for those customers with gas water heaters.

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

RWA and SRCSD, along with a number of other participating water districts, currently participate in a regional area first-come, first-serve Toilet Rebate Program. These rebates are for residential households and commercial businesses and consist of rebates up to $175 for residential and up to $200 for businesses. EGWD was a participant in this program in 2008 and 2009. During these years, 206 toilet rebates were given to EGWD customers. EGWD is not

currently a participant in this replacement program. For future residential developments, EGWD enforces the California Health and Safety Code, Section 17921.3, which requires all new buildings since 1994 to install ULFTs. Following is a discussion of the cost/benefit analysis for this DMM.

Cost/Benefit Analysis

EGWD performed two benefit/analysis calculations for this DMM. The first calculation consisted of an in-house cost/benefit analysis on the estimated outstanding households with pre-1992 toilets. At the end of 2010, EGWD customers consisted of approximately 4,855 unmetered homes and 6,660 metered homes. Assuming 75% saturation is required for compliance, EGWD estimates that of the approximately 12,050 total customers, approximately 2,380 households are in need of ULFTs. With an estimated 2,380 households and applying percentages of one toilet and two toilets per household, it is estimated that there are approximately 595 one toilet households and 1,785 two toilet households in the EGWD service area. This equates to approximately 4,165 toilets that are pre-1992 and non-conserving toilets. Assuming a rebate of $175 per toilet, the rebate program will cost EGWD approximately $772,000 in rebates alone.

Toilets manufactured prior to 1992 use approximately 3.5 to 7 gallons per flush. By replacing a 3.5 gallon per flush with a 1.28 gallon per flush high efficiency toilet, a family is estimated to save over 0.05 AFY per toilet. Assuming the rebate program was a success and all the toilets were replaced over time, the water supply savings is estimated to be 208 AFY. This volume equates to approximately a 1% water savings per year.

EGWD performed a second cost/benefit analysis using the CUWCC BMP Cost Effectiveness tool spreadsheet. Using data from EGWD the Cost Effectiveness Summary is as follows in respect to both EGWD's and the public's perspective:

Total Costs = $771,750

Total Benefits = $2,087,204

Benefit / Cost Ration = 2.70

Cost of Water ($ per AF) = $ 240 per AF

Water Savings (AFY) = 210 AFY

The results of the Cost Effectiveness analysis show that this DMM is both cost-effective to implement from the EGWD perspective as well as from the public's perspective.

This DMM evaluation takes into account economic and non-economic factors, social factors, and customer impacts. In regards to funding to implement this DMM, EGWD would be required to most likely apply for any available grants or to raise the current customer water rates. EGWD does have the legal authority to implement this DMM, if it is decided the impacts are acceptable to EGWD.

Funding to construct a new water supply source such as a new groundwater well, pump station and water quality treatment would be generated by customer water use billings or from reserves. A new groundwater well, pump station and water quality treatment providing a sustainable yield of 1,800 gpm operating at 75% of the year is estimated to cost approximately $2.5 million dollars. A new water source equates to approximately $1,200 per AFY based on construction and operational costs for the first year. Spread over 10 years, this is equivalent to approximately $165 per AFY based on construction and operating costs.

Section 7 – Climate Change (Optional)

The topic of climate change is subject to a great deal of debate and is not addressed in this UWMP. However, in anticipation of new information becoming available within the next five years, EGWD expects to discuss the topic in the 2015 UWMP.

Section 8 – Completed UWMP Checklist (Optional)

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