CITY OF CALEXICO

2010 Urban Water Management Plan

DRAFT

June 2011

Calexico City Hall
608 Heber Avenue
Calexico, CA. 92231

Prepared by:
Dynamic Consulting Engineers, Inc.
2415 Imperial Business Park Drive, Suite B
Imperial, CA 92251
(760) 545-0162
(760) 545-0163 fax

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City of Calexico

2010 Urban Water Management Plan

Contact Sheet

Date plan submitted to the Department of Water Resources:

Name of person preparing this plan:

David Dale, PE, PLS

Dynamic Consulting Engineers, Inc.

2415 Imperial Business Park Drive, Suite B

Imperial, CA 92251

Phone: **(760) 545-0162**

Fax: **(760) 545-0163**

E-mail address: **david.dale@dceinc.org**

The Water supplier is a: **Municipality, retailer**

Utility services provided by the water supplier include: **Water, Sewer**

Is this Agency a Bureau of Reclamation Contractor? **No**

Is This Agency a State Water Project Contractor? **No**

Introduction/Executive Summary

The Urban Water Management (UWMP) Act (California Water Code §10610 et seq.) requires urban water suppliers to report, describe, and evaluate:

- Water deliveries and uses
- Water supply sources
- Efficient water uses
- DMMs, including implementation strategy and schedule

In addition, the Water Conservation Bill of 2009 requires urban water suppliers to report in their UWMPs base daily per capita water use (baseline), urban water use target, interim urban water use target, and compliance daily per capita water use.

The Baseline base daily per capita water use in gallons (GPCD) (consecutive 10 year average) is 180 gallons (2001-2010).

Table 14
Base daily per capita water use — 10- to 15-year range

Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	2001	28,020	2,298.0	225
Year 2	2002	29,757	2,310.0	213
Year 3	2003	32,003	2,330.0	199
Year 4	2004	34,240	2,340.0	187
Year 5	2005	36,003	2,350.0	179
Year 6	2006	36,533	2,303.0	173
Year 7	2007	37,151	2,260.0	167
Year 8	2008	38,558	2,221.0	158
Year 9	2009	39,380	2,217.0	154
Year 10	2010	40,075	2,091.0	143
			Base Daily Per Capita Water Use[1]	180

Figure 1 - City of Calexico Average Per Capita per Day Use (2001-2010)
*population estimates from the State of California Department of Finance

The 2020 City of El Centro Urban Water Use Target was calculated to be 180 gallons per capita per day (GPCD) using Method 3 in the *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan*. This is further discussed on pages 40-44.

METHOD 3: City of Calexico Urban Water Use Target (95 percent of the 5 year average per capita per day use in gallons)	**172**

Figure 2 - City of Calexico 2020 Urban Water Use Target

The Interim Urban Water Use Target for 2015 was calculated using the average of the base line (180GPCD) and 2020 Urban Water Use Target (172GPCD):

Interim Urban Water Use Target for 2015 (average between the Base Line and Urban Water Use Target)	**176**

Figure 3 - Interim Urban Water Use Target for 2015

The City's Urban Water Use Target for 2020 is ***172*** gallons per day per capita (gpdc). In 2010, the average was 143gpdc, already in compliance. The City will be required to meet the goal of 172 gpdc by 2020 to be eligible for future state funding unless revised in the 2015 UWMP update.

The UWMP Act directs water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future demands (CWC 10612 (b)). Urban water suppliers (see definition in Part II, Section P: Glossary) are required to assess current demands and supplies over a 20-year planning horizon and consider various drought scenarios.

The UWMP Act also requires that water shortage contingency planning and drought response actions be included in a UWMP. UWMPs are to be prepared every five years by urban water suppliers with 3,000 or more service connections or supplying 3,000 or more acre-feet of water per year. Public and private utilities with multiple service areas within their districts should follow the guidelines below.

• Public utilities above the UWMP submittal threshold should include all service areas regardless of size.
• For private utilities, if the district is above the threshold, then all the service areas within that district should be included. If the utility district is below the UWMP threshold, an UWMP is not required for that district.

• One urban water use target should be determined for each UWMP.

The normal UWMP submittal cycle requires that they be prepared and submitted in December of years ending in five and zero. However, because of recent changes in UWMP requirements, State law has extended the deadline for the 2010 UWMP to July 31, 2011. Although submitted in 2011, 2010 UWMPs will be referred to as 2010 UWMPs because they include 2010 water data and to retain consistency with the five-year submittal cycle.

Based on legislative changes resulting from the November 2009 passage of SBX7-7 (hereafter referred to as the Water Conservation Bill of 2009), development of UWMPs will also enable water agencies and, in turn, the State of California to set targets and track progress toward decreasing daily per capita urban water use throughout the state.

An UWMP, including discussion of the status of a water supplier's implementation of DMMs, is required for an urban water supplier to be eligible for a water management grant or loan administered by DWR, the State Water Resources Control Board (State Water Board), or the Delta Stewardship Council (CWC §10631.5(a)). A current UWMP must also be maintained by the water supplier throughout the term of any grant or loan administered by DWR.

Changes to California law require that, beginning in 2016, water suppliers comply with water conservation requirements established by the Water Conservation Bill of 2009 in order to be eligible for State water grants or loans. These changes are discussed further in Part II, Section B: Changes in UWMP Requirements Since 2005.

Purpose of the UWMP

The purpose of this report is to review the overall supply and demand of water for the City of Calexico, identify any possible deficiencies in the water supply for the next 20 years (2010-2030).

There is no foreseeable water shortage in the City of Calexico for the next 20 years. The City of Calexico uses Colorado River water that can supply the City with sufficient water to meet all projected demand. Thus the City is not affected by climatic related supply shortages. There was a 10-year drought on the Colorado River (Oct 1999 -

2010); however, storage on the river was sufficient and the crucial elevation of 1075 was not reached. In addition, Imperial Irrigation District (IID) has senior water rights to Colorado River water and ranks urban supply higher than the agricultural supply; so even were drought on the Colorado River to impact IID's supply, the City's use would not be impacted.

An awareness of the importance of a sound water policy is important in recognizing that water in California is becoming a stretched resource. In fact, California's use of 5.2 MAFY of Colorado River water exceeds its right to 4.4 MAFY. This led to the Quantification Settlement Agreement of 2010 (QSA), under which the amount of Colorado River water available to California and to the Imperial Valley was quantified.

Land use decisions based in part upon water resources have significant effects on the physical, social, and economic character of the county. Although the UWMP is concerned with long-range goals and objectives, attention should also be given to currently existing conditions and issues. This approach will enable the City to face important issues today, thereby avoiding problems in the future.

In addition to the statement of goals, objectives and policies, the UWMP includes discussions, data, and water conservation programs which provide for the prudent and conscientious management and utilization of water resources for future development in the City. The implementation of the UWMP is meant to assure that water resources are conserved and utilized as efficiently as possible, and to provide for the long-term viability and availability of this precious resource.

This UWMP follows the outline order of the *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan* (Final, March 2011), and includes the following:

- Section 1 - Plan Preparation
- Section 2 - System Descriptions
- Section 3 - System Demands
- Section 4 - System Supplies
- Section 5 - Water Shortage Contingency Plans
- Section 6 - Demand Management Measures

**** Following Paragraphs in italicized text are verbiage from the law.*

Section 1 - Plan Preparation

Coordination

Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable (10620(d)(2)).

Table 1 - Coordination with appropriate agencies

Coordinating Agencies[1,2]	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt	Not involved / No info
Wholesaler - Imperial Irrigation District		X	X	X	X	X	
County of Imperial Planning and Development			X	X	X	X	
City of Calexico	X		X	X	X	X	
City of Brawley			X	X	X	X	
City of El Centro		X	X	X	X	X	
City of Imperial			X	X	X	X	
General public			X		X	X	
Salton Sea Authority					X	X	

Figure 4 - TABLE 1 - Coordination with appropriate agencies

Development of this plan was coordinated with the Imperial Irrigation District, City Staff, the Mayor's Office, City Planning, Fire, Building, Police, and local Emergency Services offices.

Drafts of the Management Plan were distributed to Imperial Irrigation District, Imperial County Planning/Building and Public Works Departments, and the City of Calexico for review and revisions. The final draft was distributed in May 2011 to staff of the Imperial Irrigation District; the cities of Brawley, Calexico, Imperial; and Imperial County for agency comments and recommendations. Comments and recommendations have been incorporated into the Management Plan. Copies were distributed to Imperial County

Planning/Building and Public Works departments; Imperial Irrigation District Public Affairs; cities of Brawley, Calexico, Imperial; the public libraries of El Centro, Calexico, Brawley, and Imperial; and to others on request for public review.

Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision (10621(b)).

The City provides water to connections within its service boundary only. However, the city sent notifications to all the cities and other agencies listed in Table 1 at least 60 days prior to the UWMP public hearing that the plan was being reviewed and changes were being considered.

The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan (10635(b)).

A copy of the 2010 UWMP will be provided to each city in the Imperial Valley that is required to submit an UWMP, the County of Imperial, and the Imperial Irrigation District no later than 60 days after submission to DWR.

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan (10642).

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

The City of Calexico encourages community participation in its urban water management planning efforts.

Copies of the draft plan were available at City Hall. The City published notice in the local newspaper of the availability of the draft UWMP for public inspection and stating the date and time of the public hearing to adopt the UWMP. The notice was published

once a week for two successive weeks.

The hearing took place on September 6, 2011 at 6:00 pm at City Hall located at:

608 Heber Avenue
Calexico, CA. 92243

Following the public meeting, a formal public hearing was held during the regular meeting of the City Council for review and comment on the draft plan before the City Council's approval.

The final plan, which was adopted by City Council on September 6, 2011, was distributed to the cities of Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial, and Westmorland; Imperial County Planning/Building and Public Works departments; Imperial Irrigation District's Public Affairs; public libraries in the cities of El Centro, Calexico, Brawley, and Imperial; and to others upon request. The final plan was submitted to the California Department of Water Resources within 30 days of Council approval.

Plan Adoption, Submittal and Implementation

The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640) (10621(c)).

If changes are necessary to the UWMP after adoption by the city, the City will hold another public hearing to readopt the plan.

After the hearing, the plan shall be adopted as prepared or as modified after the hearing (10642).
An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan (10643).

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

The city will implement the UWMP after adoption. Procedures to implement will include annual reviews of progress on the Demand Management Measures, use of the UWMP in developing a revised Water Master Plan and in the planning process of new development within the City.

An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after

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

Within 30 days of adoption, the adopted UWMP will be submitted to DWR and the California State Library. Calexico does not supply water to another city or nor to any area of Imperial County.

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

Within 30 days of submitting the UWMP to DWR, the adopted UWMP has been or will be available for public review during normal business hours. The plan is available for review at City Hall located at:

608 Heber Avenue
Calexico, CA. 92243

Section 2 - System Description

Describe the service area of the supplier (10631(a)).

Service Area Physical Description

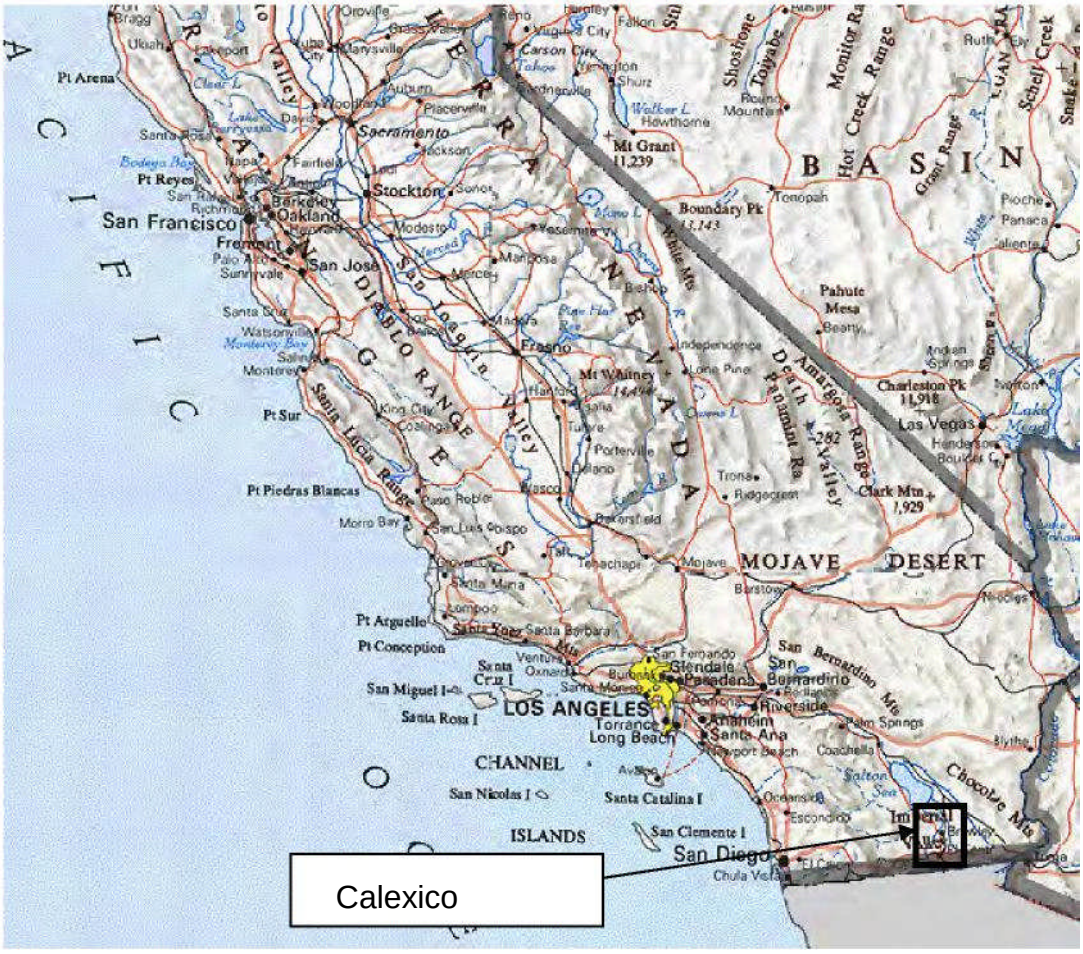

Figure 5 - Vicinity Map for the City

The City of Calexico is located at the southern terminus of State Route 86 along the U.S./Mexico International Border. The City of Calexico covers approximately 4.5 square miles or 2,880 acres (Calexico's planning area covers 14 square miles or 8,960 acres). Land uses within Calexico's incorporated boundaries include: 1,128 acres allocated to housing, 160 acres to commercial uses, 85 acres for industrial use, and the remaining acreage is allocated to agricultural open space use. Much of Calexico's recent growth can be attributed to the presence of the maquiladora manufacturing plants across the U.S./Mexico International Border in Mexicali, Mexico. The maquiladoras provide labor-

intensive manufacturing services for U.S. based industries and are becoming more attractive to U.S. businesses trying to remain competitive in the current economic climate.

The City of Calexico Urban Area is approximately 6,980 acres and surrounds the incorporated City of Calexico. The Calexico Urban Area is generally bounded on the west by Dogwood Road; on the north by Willoughby Road and Jasper Road; on the east by Bowker Road and the designated Specific Plan Area; and on the south by the city of Mexicali and the Republic of Mexico. See Figure 6 for Calexico Urban Area.

The City of Calexico is located in Imperial County, which is located in the southeast comer of California. It is bordered on the west by San Diego County, on the north by Riverside County, on the east by the Colorado River which is the California/Arizona boundary, and on the south by 84 miles of the International Boundary with the Republic of Mexico. Imperial County encompasses an area of 4,597 square miles or 2,942,080 acres. The Imperial Valley is an area within Imperial County that extends southward for 50 miles from the southern end of the Salton Sea to Mexico.

The Imperial Valley was created when the Colorado River formed a delta that isolated the Salton Trough from the Gulf of California. Subsequently, under desert conditions, the inland sea dried up. Later, the trough was occupied by lakes for various periods, and deposition into these lakes gave the valley its characteristic flat lands and fertile soils.

The geographic center of the Imperial Valley is one of the most productive agricultural areas in the world, despite the fact that it is in a very arid region. The general area of the Imperial Valley, also known as the Imperial Unit, is bounded on the north by the Salton Sea, on the south by the U.S./ Mexico border, on the east generally by the East Highline Canal, and on the west generally by the Westside Main Canal (See Figure 6).

Approximately fifty percent of lands in Imperial Valley are undeveloped and are under federal ownership and jurisdiction. One-fifth of the nearly 3 million acres in Imperial Valley are irrigated for agricultural purposes, most notably the areas known as Coachella Valley and the Imperial Valley. The Net irrigated agriculture area in 2010 consisted of 474,140 acres (IID 2010 Area Receiving Water Report). The developed area within the Imperial Valley represents less than one percent of the total amount of land. Approximately seven percent of Imperial Valley is within the boundaries of the Salton Sea.

A significant geographical feature in the Imperial Valley is the Salton Trough, which contains the Salton Sea and the Imperial Valley, and has been evolving for millions of years. It is a rift in the earth's crustal plates. The East Pacific Rise is the boundary between the Pacific and North American Plates. It extends up the Gulf of California by a series of spreading centers with strike slip faults. The thinning of the crust from the slow but continuous widening of the Salton Trough causes the earth's magma to rise closer to the surface and generates abnormally high heat flow, which in turn heats deep ground waters.

The trough is a structural extension of the Gulf of California. In prehistoric times it contained the ancient Lake Cahuilla (not to be confused with the present Lake Cahuilla which is located at the terminus of the Coachella Branch of the All-American Canal).

City of Calexico Water

The City of Calexico receives raw water from the Imperial Irrigation District. Approximately three percent of the Imperial Irrigation District's untreated water is ultimately used for urban purposes and is provided indirectly to consumers through a variety of public and private treatment agencies.

The City of Calexico’s sphere of influence is located within the Imperial Unit of the Imperial Irrigation District's Irrigation (IID) service area. The 699,092 acre Imperial Unit serves the Imperial Valley including the urban areas for the cities of El Centro, Calexico, Imperial and Brawley and approximately a quarter of Imperial County's unincorporated area. In total, IID delivers water to an area of just over 520,000 acres, including cities, cemeteries, schools, parks, golf courses, etc. in addition to the irrigated land. The Imperial Irrigation District's total service area, lying entirely within Imperial Valley, is divided into four units: Imperial, West Mesa, East Mesa, and Pilot Knob, with a gross acreage of 1,061,637 acres.

A significant portion (around 97%) of the water demand in the Imperial Region is for irrigation. Agriculture is successful in this region for two reasons: 1) rich soils which have accumulated on the valley floor over thousands of years; and 2) the large quantity of water that is transported 80 miles from the Colorado River via the All-American Canal and distributed to farmlands by a complex system of smaller canals.

Recycled water low in salinity could be used for agricultural; however, treatment and distribution of recycled wastewater low in salinity is not cost effective option at this time. Colorado River water salinity has averaged 760 parts per million over the last 20 years, and treated municipal wastewater is approximately 200-300 ppm higher in salinity. In addition, agricultural producers are averse to using treated wastewater due to consumer perceptions that the crops might be tainted.

An expanded water conservation program is one of several priorities supported by the City, and conservation programs such as school education, public information, and landscape design and water use standards are being implemented.

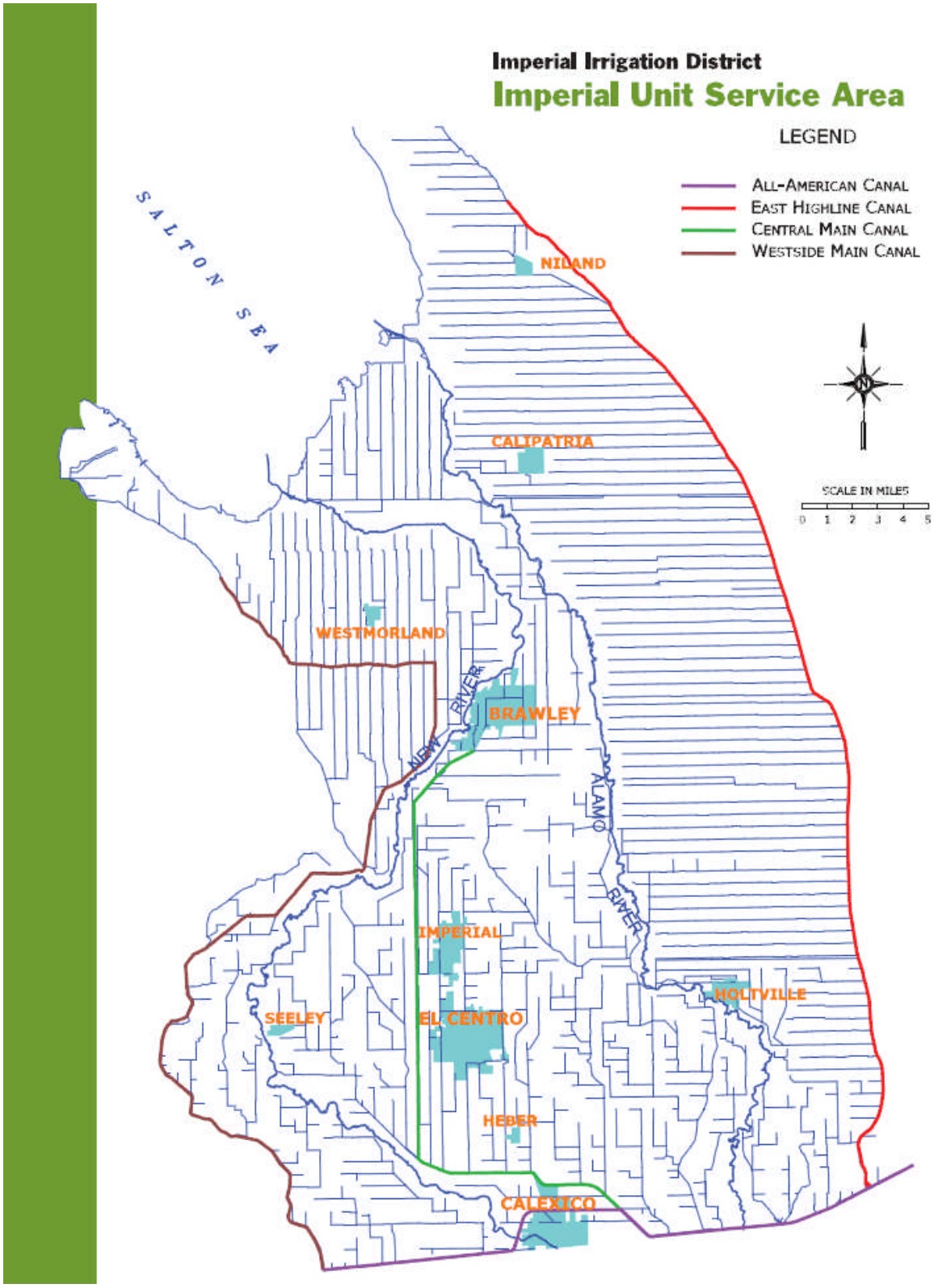

Figure 6 – IID Imperial Unit Service Area

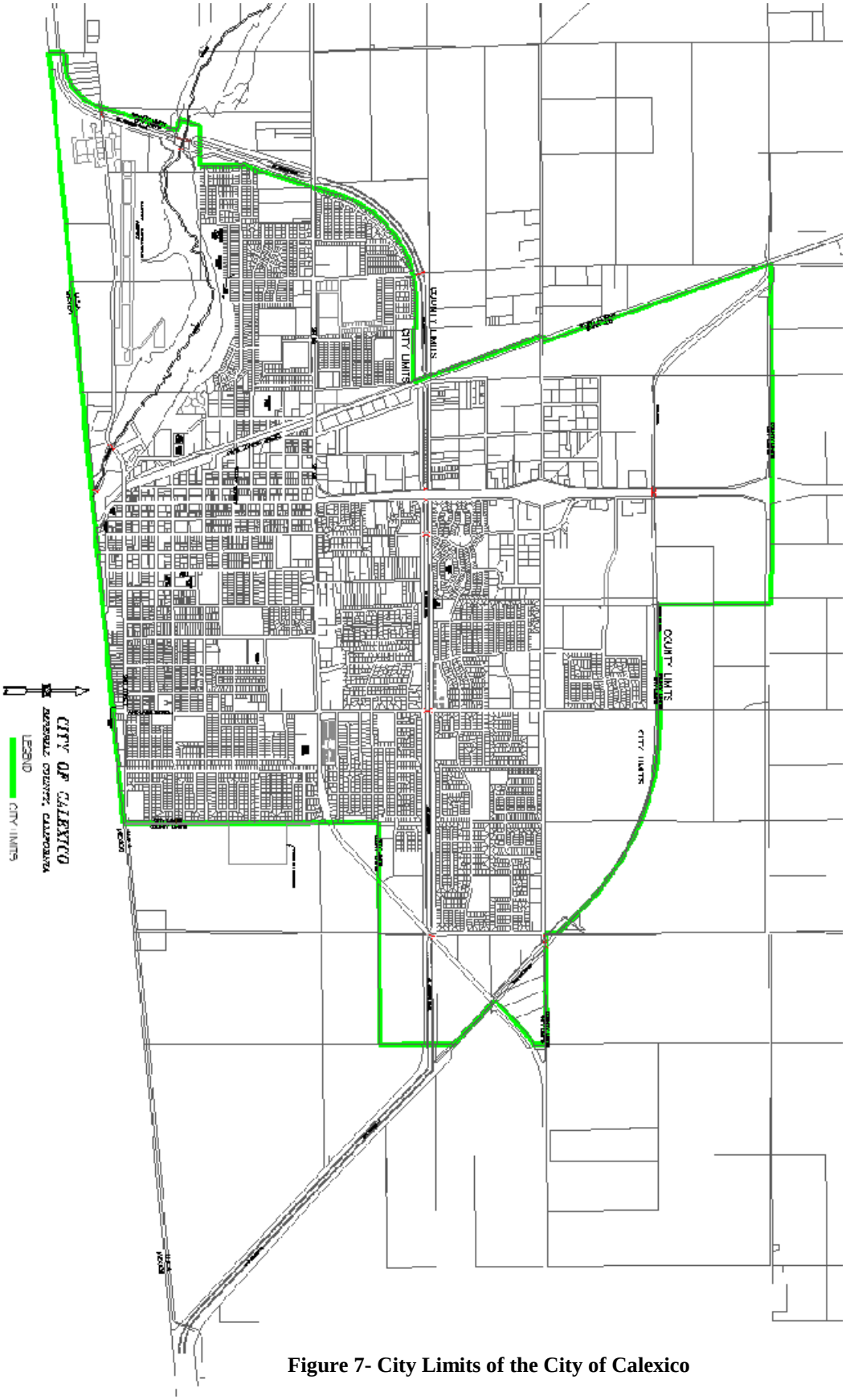

Figure 7- City Limits of the City of Calexico

Description of City Facilities

City of Calexico Distribution System

The City provides potable water to homes and businesses by treating Colorado River water imported by the Imperial Irrigation District (IID). The imported water is a surface water source. Its treatment must comply with the Surface Water Rule of the Federal and State Safe Drinking Water Act. The California Department of Public Health (CDPH) granted a permit to the City of Calexico to supply water for domestic purposes to the City of Calexico. The treatment facility currently meets all applicable United States Environmental Protection Agency domestic water quality standards.

The City of Calexico takes its water from the All American Canal. Water is pumped from the canal to a 25 MG raw water pond using three 2500 gpm pumps. Water from the pond is pumped to the treatment plant by three 2100 gpm high/low speed pumps to the treatment plant's flow splitter box. The treatment plant is designed to treat 14 MDG, and currently uses 9.0 MGD on a maximum day.

The water is delivered to two contact clarifiers with capacities of 4.2MGD and 10 MGD. Alum is added to coagulate the suspended solids in the primary mixing zone. After the primary mixing zone water passes through a secondary mixing zone and rises through a sludge blanket. Filtration is provided with two sets of dual media, anthracite and sand, gravity filters. Filters are designed to provide air scour during the backwash. Wasted backwash water is discharged to the New River. Inactivation with chlorine is provided in two clearwells with a combined capacity of 14 MG. The removal and inactivation requirements for the plant are 4 log virus reduction and 3 log Giardia reduction. The plant is given 2.0 log virus removal credit through filtration and 2.5 log Giardia removal credit. Therefore it is required to achieve a 0.5 log Giardia inactivation which it can reliably achieve. Ammonia is added just prior to the distribution system to create a chloramine residual.

There is a valve exercise program in place for the distribution system. There have not been any major operational problems with the distribution system.

The raw water storage pond is located approximately 3.5 miles north of the water treatment plant. The City recently installed three influent pumps capable of pumping 7,000 gpm each and four effluent pumps capable of 5,000gpm each. The total capacity of raw water to the plant is 20,000gpm. There is a 650kw generator onsite in case of power failure. The pumps are controlled by a scada system tied into the water treatment plant facilities. The pumps are connected to the water treatment plant via a 24 inch diameter forcemain pipeline. The potential for cross-connections is small due to the large size transmission main.

There is a problem with trespassing at the raw water pond site. The City has also recently installed lights and the building that houses the scada system has an alarm. The City plans to install two more light poles and a camera system at the raw water pond site.

The City samples daily for raw water turbidity and weekly for total and fecal coliforms. The raw water in the raw water ponds ranges from 0.2 to 15.2NTU. At certain times of the year, total and fecal coliforms were highly variable and above the minimum treatment threshold. TTHM ranged from 54ppb to 73ppb. The City does not exceed the MCL of 80ppb, probably because chloramines are used for disinfection instead of free chlorine.

Parameter	MGD	GPM
Annual Daily Average	5.75	
Maximum Day	9.1	
Minimum Day	2.5	
Maximum Day Peak Hour		6,350
Minimum Day Peak Hour		1,700
Maximum Month Average	245	
Minimum Month Average	114	

Figure 8 - 2010 Distribution System Flows

Land Use

The Imperial Valley is predominantly an agricultural area. Agricultural development in the Imperial Valley began at the turn of the twentieth century and now includes

approximately 475,000 acres of irrigated land that support a $1 billion-plus annual local agricultural economy. Imperial Irrigation District is the regional water supplier in the Imperial Valley, delivering Colorado River flows to all agricultural lands and urban water retailers within its water service area. Imperial Irrigation District operates open channel gravity flow irrigation and drainage systems and continually strives to develop innovative ways to improve its operations, increase reliability, and to conserve water.

While the agriculture-based economy is well-established, land use is expected to vary somewhat over the coming years as urbanization and growth occur adjacent to existing urban areas. In addition, development of renewable and geothermal energy in the rural areas is expected.

Current Land Use

Due to contractual restrictions related to IID's Colorado River entitlement, total farmable acres remain fairly constant and total net acres cropped exhibit minor fluctuations. Over the past five years (2005-2009), cropping patterns have remained relatively constant with variations in forage crop acreage occurring as a result of market price fluctuations, production cost factors, and insect/disease pressures.

	2005	2006	2007	2008	2009
Total Forage	**249,620**	**266,077**	**246,635**	**217,855**	**192,632**
TOTAL GARDEN CROPS	94,751	101,096	98,992	100,354	94,679
TOTAL FIELD CROPS	366,963	371,734	374,423	415,208	380,913
TOTAL PERMANENT CROPS	18,821	19,100	19,196	19,753	19,758

More than 120 types of crops are currently grown. In addition, a number of feedlots and dairies located in the Valley have significant economic impact. In 2009, based on acreage, Imperial Valley's top twelve crops were alfalfa, wheat, Bermuda grass, Sudan grass, lettuce, sugar beets, carrots, kleingrass, broccoli, onions, melons and sweet corn, representing nearly 90% of the cropped acreage. In the Imperial Valley, the total area farmed was 488,499 acres in 1990, 481,151 acres in 1995, 479,000 acres in 2000 and 473,903 acres in 2009.

Urban land uses within IID's Imperial Unit consist of cities, state prisons, a military base, geothermal plants, and other smaller industrial users. Most of the urban lands

are concentrated in and around the incorporated and unincorporated cities with some small clusters of rural residences located away from the population centers.

IMPERIAL COUNTY Land Use Distribution (in Acres), 1985		
Irrigated (Agriculture)		
	Imperial Valley per County General Plan Current Farmable per IID (2010) Total Area Receiving Water from IID (2010)	512,163 474,140 520,000
	Bard Valley (Including Reservation)	14,737
	Palo Verde Valley	7,428
	Total	534,328 (18.2%)
Developed		
	Incorporated	9,274
	Unincorporated	8,754
	Total	18,028 (0.6%)
Salton Sea**		211,840 (7.2%)
Desert/Mountains		
	Federal	1,459,926
	State	37,760
	Indian	10,910
	Private	669,288
	Total	2,177,884 (74.0%)
IMPERIAL COUNTY TOTAL		2,942,080 Acres

*All acreages are approximations and are, therefore, only for informational purposes.
**Elevation of 230 feet below mean sea level.
Source: Imperial County General Plan, County Overview-September 1985 (still current as of 2011), Table 7.

Figure 9 - Imperial County Land Use Distribution

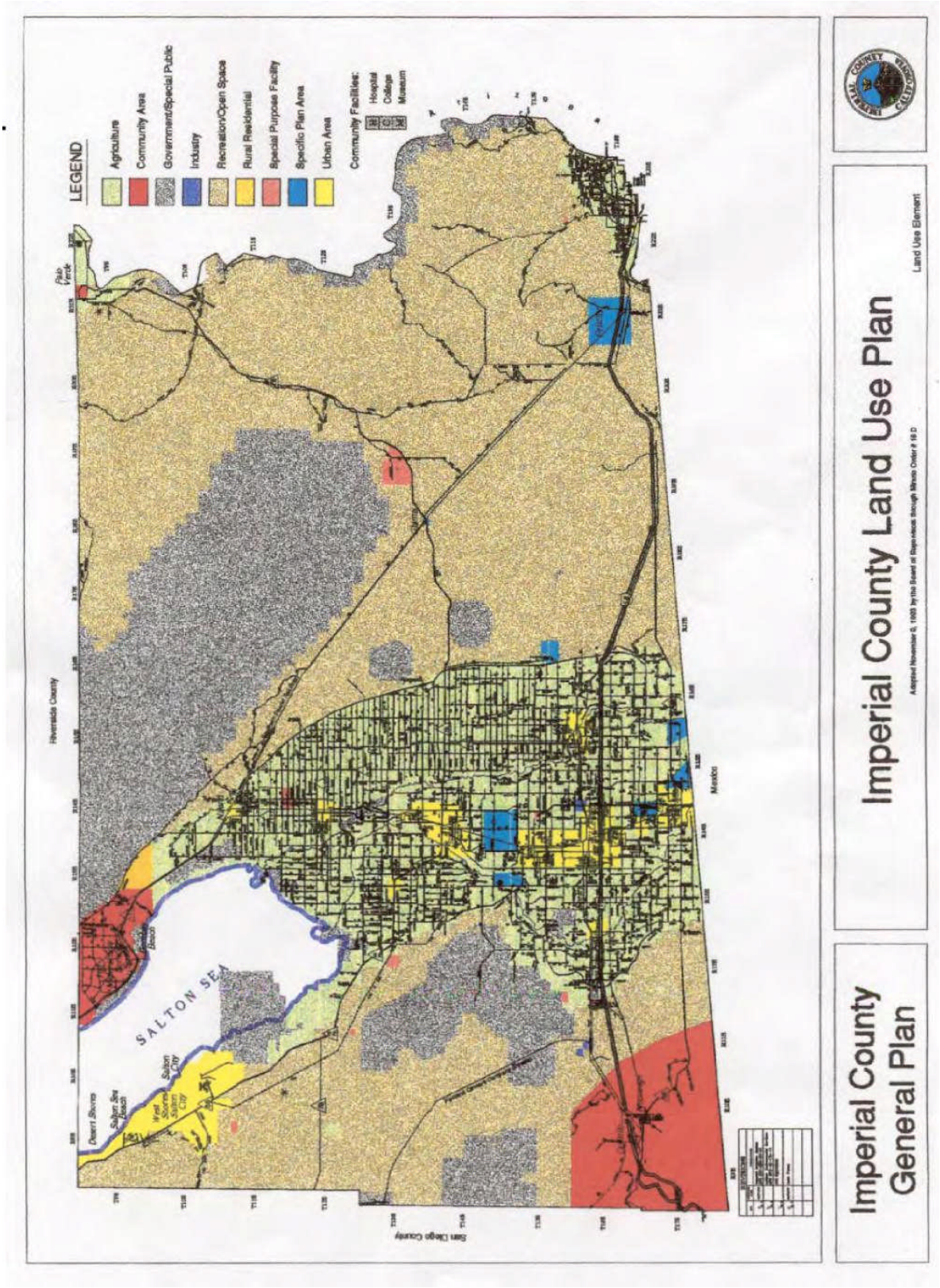

Figure 10 - Imperial County Land Use Map

Future Land Use

The Imperial County General Plan, updated September 2004, identifies urban areas surrounding the incorporated cities of Brawley with 9,890 acres, Calexico with 6,980 acres, Calipatria with 2,880 acres, El Centro with 16,000 (City of El Centro Draft General Plan, June 2003) acres, Holtville with 4,080 acres, Imperial with 8,480 acres, and Westmorland with 880 acres. Urban areas surrounding the unincorporated communities include Heber with 960 acres, Niland with 1,290 acres and Seeley with 1,520 acres. Urban areas for specific plans located within Imperial Unit boundaries include: East Border Crossing Specific Plan area with 1,700 acres, Holtville Air Strip Specific Plan area with 1,830 acres, Mesquite Lake Specific Plan area with 5,760 acres (9 sq miles), and Heber Specific Plan area with 4,770 acres. Some of these designated urban areas have been developed and some have not. Some of these areas could possibly complete developments in the future.

The total urban area surrounding cities and communities located within the Imperial Unit is 52,960 acres or 7.6 percent of the Imperial Unit area. The majority of these lands are currently farmed. Four Specific Plan Areas within the Imperial Unit are designated for possible development. The total area within the four Specific Plan Areas is 14,060 acres or 2.0 percent of the Imperial Unit area. Thus, total combined (actual plus projected) urban area surrounding cities and communities and for the four Specific Plan Areas is 67,020 acres or 9.6 percent of the Imperial Unit area.

Any urban areas yet to be developed will be characterized by a full level of urban services, in particular public water and sewer systems, and will contain or propose a broad range of residential, commercial, and industrial uses. It is anticipated that most urban developments that are yet to be developed will eventually be annexed or incorporated into existing cities, and provide the full range of public infrastructure normally associated with municipalities such as public sewer and water, drainage improvements, street lights, fire hydrants, and fully improved paved streets with curbs and sidewalks that are consistent with city standards.

Trends in land use point to an increase in the development of existing urban areas to provide residential capacity for an increased population. With development of existing urban areas, associated increases in service and infrastructure will follow. Even so, total urban land use in the years 2010 through 2030 will remain small in comparison to agriculture land use within the Imperial Unit.

(Describe the service area) climate (10631(a)).

Climate Factors

Imperial Valley is an arid desert, characterized by hot, dry summers and mild winters. Summer temperatures typically exceed 100 degrees Fahrenheit and the winter low temperatures rarely drop below 32 degrees Fahrenheit. The remainder of the year has a relatively mild climate with temperatures averaging in the mid-70s. The average annual air temperature is 72 degrees Fahrenheit and the average frost-free season is about 300 days per year.

Annual rainfall in the Imperial Valley averages less than three inches, with most rainfall associated with brief but intense storms. The majority of the rainfall occurs from December through March. Periodic summer thunderstorms are common in the region.

Calexico Climate Data 3/1904 – 6/2010													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg. Max. Temp (F)	67.2	72.9	78.6	85.4	91.9	101.4	103.9	103.3	98.4	87.6	76.6	67.2	86.2
Avg. Min. Temp (F)	39.0	44.1	48.2	53.4	59.4	67.5	75.8	74.8	67.8	56.1	46.0	39.1	55.9
Ave. Total Precip. (in.)	0.42	0.35	0.22	0.07	0.03	0.01	0.10	0.41	0.24	0.24	0.21	0.42	2.69

Figure 11 - City Climate Data

Source: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca1288

Prevailing Winds

Imperial Valley elevations range from a few feet above to 273 feet below mean sea level. The U.S./Mexico border, located at the southern end of Imperial Valley, has an elevation of four feet above mean sea level. The Salton Sea located at the northern end of Imperial Valley, and the water level is 230 feet below MSL (the sea bottom is 273 feet below MSL). The relatively flat topography (235 feet in 35 miles) of the Imperial Valley and surrounding areas, in conjunction with strong night and day

temperature differentials, particularly in the summer months, produce moderate winds and deep thermal circulation systems. The thermal systems facilitate general dispersion of the air.

Wind data from Naval Air Facility El Centro that is used at El Centro Municipal Airport, show that the prevailing winds blow in a western direction. A crosswind occasionally blows in a southeast direction.

(Describe the service area) current and projected population . . . The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier . . . (10631(a)). (Population projections) shall be in five-year increments to 20 years or as far as data are available (10631(a)).

Service Area Population

The figure shows the 2000 through 2010 population from the California Department of Finance (DoF). The population estimates are for the area directly served by the Cities.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Brawley	22,052	22,342	22,477	22,722	23,390	23,863	25,342	25,421	26,391	26,976	27,743
Calexico	27,109	28,020	29,757	32,003	34,240	36,003	36,533	37,151	38,558	39,380	40,075
Calipatria	7,289	7,277	7,608	7,649	7,789	7,876	7,807	7,736	7,757	8,111	8,233
El Centro	38,025	38,436	38,704	39,344	39,841	40,728	41,766	41,626	43,119	44,303	45,365
Holtville	5,612	5,669	5,690	5,709	5,724	5,703	5,813	6,232	6,437	6,521	6,641
Imperial	7,560	7,758	8,105	8,521	9,277	9,496	10,083	11,726	12,693	12,985	13,374
Westmorland	2,131	2,172	2,192	2,200	2,209	2,424	2,360	2,349	2,394	2,429	2,416
Unincorporated	32,583	33,135	33,281	33,697	33,960	34,774	36,117	38,801	38,147	38,723	39,182
Incorporated	109,778	111,674	114,533	118,148	122,470	126,093	129,704	132,241	137,349	140,705	143,847
Imperial Valley Total	142,361	144,809	147,814	151,845	156,430	160,867	165,821	171,042	175,496	179,428	183,029

Figure 12 - Imperial Valley Population Estimates, California Department of Finance

Source: DoF; Table 2: E-4 Population Estimates for Cities, Counties and State, 2001-2010

Customer Type	2005	2010	Average Five Year % increase
Single family res.	6,122	7,065	15.40%
Multi-family residential	484	510	5.37%
Commercial/Institutional	527	570	8.16%
Industrial	3	3	0.00%
Landscape Irrigation	0	0	0.00%
Other (Gov & Hospital)	0	0	0.00%
Calexico Total	**7,136**	**8,148**	14.18%
2005-2010 five year population increase per DoF			**11.11%**

Figure 13 – Past and Current Connections by Customer Type

Future Population

California Department of Finance developed population estimates for Imperial County through 2010. Figure 3 shows data from *State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2008.* The average annual population growth rate was 2.6 percent. This growth rate was used to estimate the population growth through 2035:

	2005	2010	2015	2020	2025	2030	2035
Brawley	23,915	28,547	32,271	35,994	39,346	42,698	46,555
Calexico	36,079	41,705	47,144	52,583	57,480	62,377	68,013
Calipatria	7,884	8,371	9,463	10,554	11,537	12,520	13,651
El Centro	40,817	46,640	52,723	58,805	64,282	69,758	76,060
Holtville	5,715	6,963	7,871	8,779	9,597	10,415	11,356
Imperial	9,516	13,730	15,521	17,312	18,924	20,536	22,392
Westmorland	2,430	2,591	2,929	3,266	3,571	3,875	4,225
Other*	36,116	37,055	38,018	39,007	40,021	41,062	42,129
Total	162,472	185,602	205,938	226,300	244,757	263,241	284,380

Figure 14 - Forecasts through 2035 based on Department of Finance Population Projections

* Includes all unincorporated municipal areas

Table 2 Population — current and projected						
	2010	2015	2020	2025	2030	Data source[2]
Service area population[1]	40,075	45,563	51,802	58,896	66,960	Department of Finance

[1] Service area population is defined as the population served by the distribution system. See Technical Methodology 2: Service Area Population (2010 UWMP Guidebook, Section M).
[2] Provide the source of the population data provided.

Figure 15 – TABLE 2 Current and Projected Population

Describe . . . other demographic factors affecting the supplier's water management planning (10631(a)).

The U.S. Census Bureau estimated he median household income in California at $56,134 in 2009, and $46,816 in the year 2000. In comparison, median household income in Imperial County was $31,870 in the year 2000, with a per capita income of $13,239. Imperial County as a whole, and the City of Calexico in particular, are each designated as a disadvantaged community (68% of median household income in 2000); 2010 US Census data were not available when this UWMP was being prepared.

Source: http://www.census.gov/hhes/www/income/data/statemedian/index.html

Imperial County has the highest unemployment rate of any county in the United States.

Area Name	Labor Force	Employment	Unemployment	Unemployment Rate (%)
Imperial County	81,200	60,800	20,400	25.1
City of Brawley	14,000	10,100	3,900	27.6
City of Calexico	16,200	11,700	4,500	28.0
City of Calipatria	1,800	1,300	500	26.7
El Centro	23,600	18,000	5,600	23.8
Heber CDP	1,800	1,100	700	38.7
City of Holtville	3,500	2,700	800	23.4
City of Imperial	5,000	4,200	900	17.4
City of Westmorland	1,500	900	500	35.6

Figure 16- Unemployment Numbers - Imperial County and Cities

Source: California Employment Development Department
http://www.labormarketinfo.edd.ca.gov/?pageid=1006

Figure 17 shows the 2000 census data for population, housing units, average household size, land area, and population density for the individual cities within the Imperial Valley.

	Population[1]	Housing Units[1]	Average Household Size	Land Area (acres)[2]	Population per Acre
Brawley	23,915	7,514	3.3	9,890	2.4
Calexico	36,079	9,148	4.0	8,300	4.3
Calipatria	7,884	1,073	3.6	4,285	1.8
El Centro	40,817	13,029	3.3	14,300	2.8
Holtville	5,715	1,620	3.6	4,080	1.4
Imperial	9,516	2,955	3.3	8,480	1.1
Westmorland	2,430	748	3.5	880	2.8
Total	126,356	36,087		50,215	
Weighted Average			3.51		2.37

Figure 17 – Year 2000 Demographic Data for Imperial Valley Cities

1 - State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2008, with 2000 Benchmark. Sacramento, California, May 2008.
2 – County of Imperial – Imperial County General Plan, 2006

Section 3 – System Demands

Baselines and Targets

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

Water Per Capita water usage is very seasonally dependent, largely due to increased landscape irrigation during the hot summer months. Winter usage by all residences is only 55% of that during summer months. Residences consume more than all other users and have the most fluctuation in monthly usage. Commercial and Governmental customers reduce water consumption during cooler months. Industrial consumption

increases substantially during winter; however, industrial usage accounts for less than 2% of the total annual usage. As a result, it appears that nearly all of the summer increase in consumption is caused by landscape irrigation.

The existing City's water billing system identifies customers' categories, so that accounts can be classified by use class and can identify each customer by sector and usage category. The total amount of water delivered into the system is metered at the water treatment plant and is shown in Table 14. Un-metered flows include park irrigation and system losses. For 2010 unmetered flows and system losses account for approximately 25% of the total water pumped into the system.

It is anticipated that this will be reduced to less than 10% over the next 20 years. The treated water flows from 2005 to 2010 decreased 12.5% over the five year period. This is probably mostly due to increased water rates within the City.

Residential (Single Family and Multi-Family) water usage comprises approximately 83% of the total amount of water that is billed by the city.

2010 Pumping Records	Total Flow	Per Capita Per Day (gallons)
January	129,300,000	104
February	107,800,000	93
March	140,600,000	113
April	146,300,000	122
May	201,600,000	162
June	215,600,000	179
July	244,300,000	197
August	231,700,000	187
September	216,100,000	180
October	171,400,000	138
November	156,200,000	130
December	130,400,000	105
Average Monthly	174,275,000	143

Figure 18 - 2010 Monthly Pumping Records

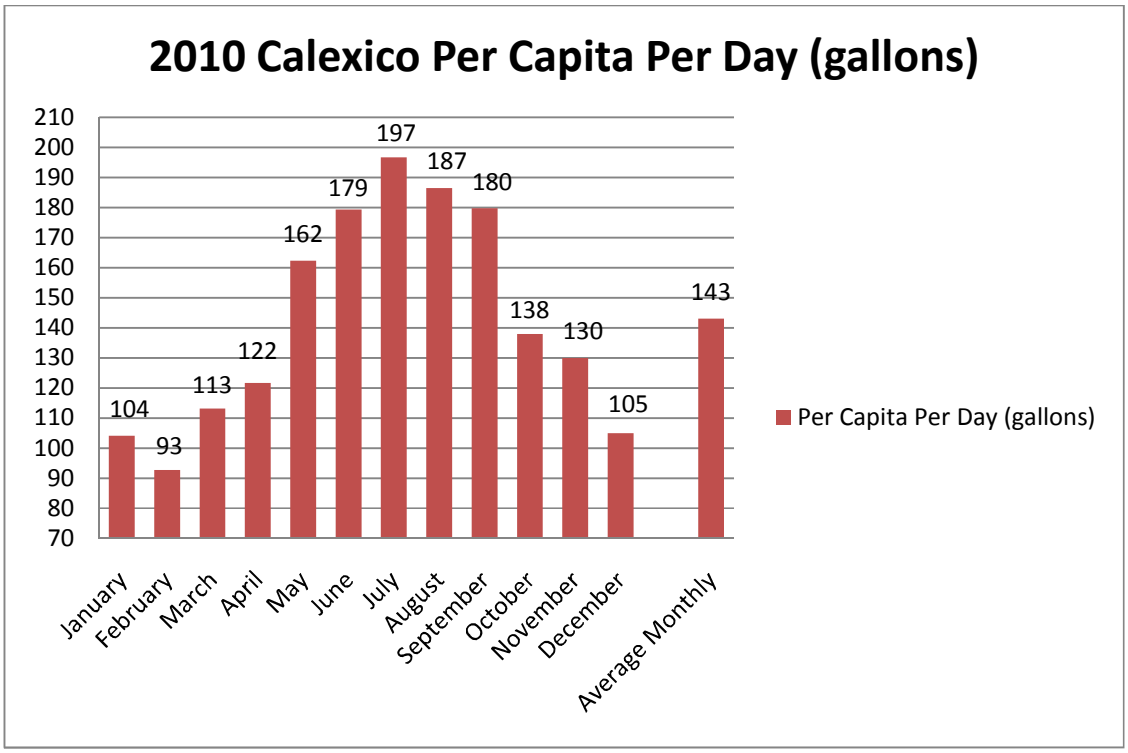

Figure 19 – 2010 Monthly Calexico Per Capita Use graph

Conservation Bill of 2009 (SBX7-7)

The Water Conservation Bill of 2009 (SBX7-7) is one of four policy bills enacted by the California legislature as part of the November 2009 Comprehensive Water Package (Special Session Policy Bills and Bond Summary). The Water Conservation Bill of 2009 provides the regulatory framework to support the statewide reduction in urban per capita water use described in the 20x2020 Water Conservation Plan (DWR and others 2010). It also addresses agricultural water use; and commercial, industrial, and institutional (CII) water use. **Method 3** was used to calculate the target per capita water use. Calculations for Method 1 are shown for information only.

Before California can achieve the Final 2020 Statewide Target of 154 GPCD, each water supplier must determine and report its existing baseline water consumption and establish either its own or cooperative targets. This reporting is to begin with the 2010 UWMP, as required by the Water Conservation Bill of 2009.

SBX7-7 describes what is required of water suppliers to identify their water conservation targets and track their progress toward achieving those targets. It also

requires that water suppliers document and report targets and progress in UWMPs (CWC §10608.20(e)).

Base daily per capita water use — 10- to 15-year range				
Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	2001	28,020	6.3	225
Year 2	2002	29,757	6.3	213
Year 3	2003	32,003	6.4	199
Year 4	2004	34,240	6.4	187
Year 5	2005	36,003	6.4	179
Year 6	2006	36,533	6.3	173
Year 7	2007	37,151	6.2	167
Year 8	2008	38,558	6.1	158
Year 9	2009	39,380	6.1	154
Year 10	2010	40,075	5.7	143
			Base Daily Per Capita Water Use[1]	180

Figure 20 - Ten Year Average Per Capita per Day Use Data

The City does not use recycled water; therefore, no deduction for recycled water was made.

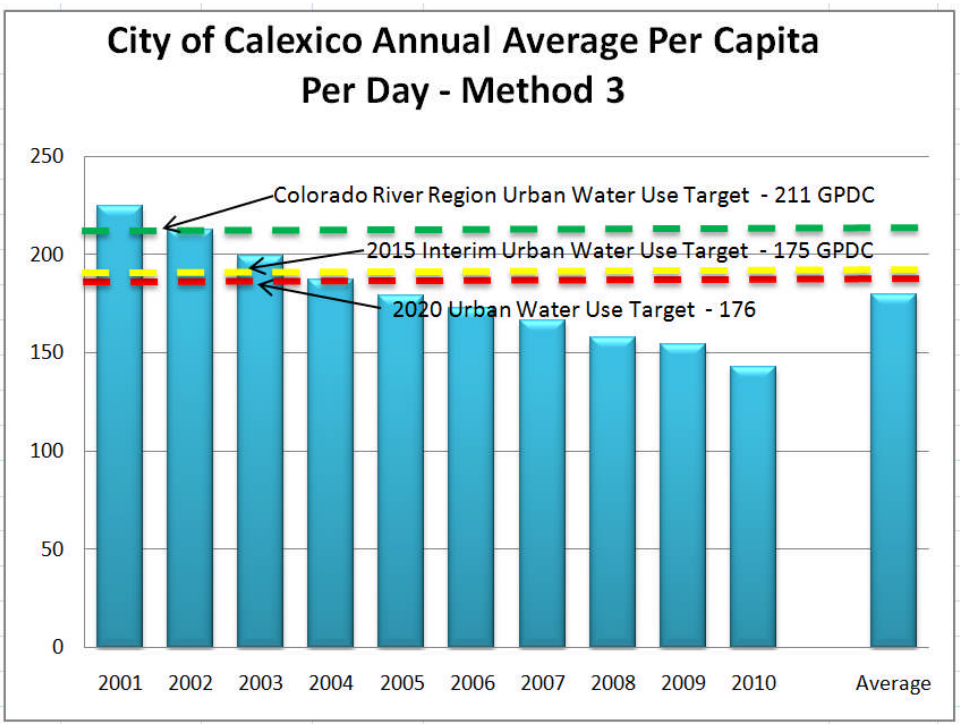

Figure 21 - City of Calexico Annual Average Per Capita Per Day Use - Gross Water Method 1

Table 13 Base period ranges			
Base	**Parameter**	**Value**	**Units**
10- to 15-year base period	2008 total water deliveries	2,221	*see below*
	2008 total volume of delivered recycled water	0	*see below*
	2008 recycled water as a percent of total deliveries	0	percent
	Number of years in base period[1]	10	years
	Year beginning base period range	2001	
	Year ending base period range[2]	2010	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2003	
	Year ending base period range[3]	2007	

Units (circle one): million gallons per year

[1]If the 2008 recycled water percent is less than 10 percent, then the first base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first base period is a continuous 10- to 15-year period.

[2]The ending year must be between December 31, 2004 and December 31, 2010.

[2]The ending year must be between December 31, 2007 and December 31, 2010.

Figure 22 – TABLE 13 Base period ranges

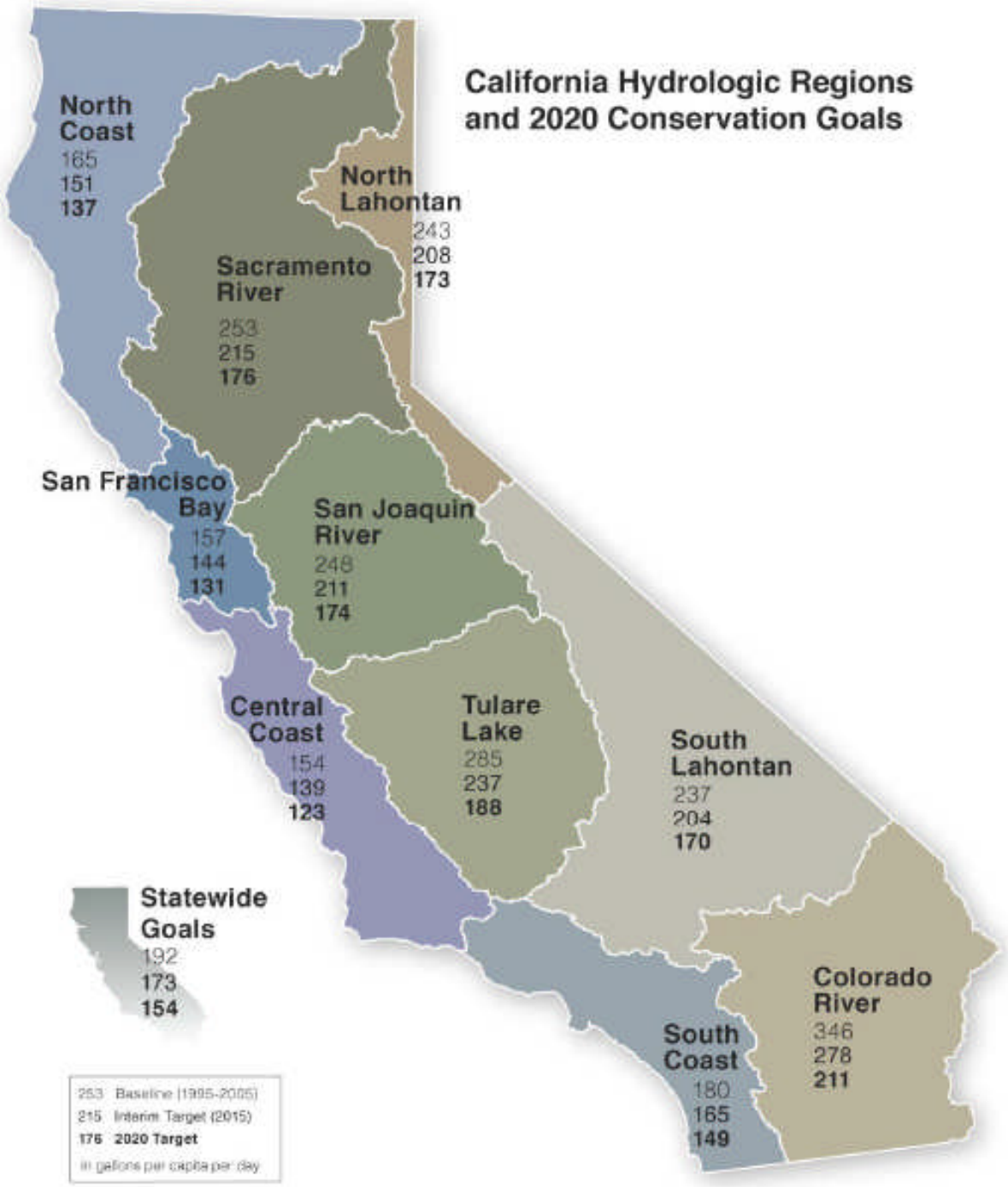

Figure 23 - California Hydrologic Regions and 2020 Conservation Goals

The State of California determined that the minimum conservation goals among the different hydrologic areas. For the Colorado River Region, in which the city resides, the per capita per day is 211GPCD:

METHOD 3: 95% of the California 2020 water conservation goals - Colorado River Region (Gallons per day per capita)	**200**

Figure 24 - California 2020 Urban Water Use Target for the Colorado River Region

Table 15
Base daily per capita water use — 5-year range

Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	2003	32,003	2,330.0	199
Year 2	2004	34,240	2,340.0	187
Year 3	2005	36,003	2,350.0	179
Year 4	2006	36,533	2,303.0	173
Year 5	2007	37,151	2,260.0	167
			Base Daily Per Capita Water Use[1]	181

Figure 25 TABLE 15 Base daily water use GPCD – 5-year range

The following table lists five consecutive years of per capita use from 2003-2007. The 5-year Base Daily Per Capita Use is 181.

Since 95% of the five year running average is 172, which is less than 95% of the hydrologic region's statewide target (200), the Urban Water Use Target is the lower of the two, 176 gallons per day per capita. The City will elect to use Method 3 to determine the Urban Water Use Target.

METHOD 3: City of Calexico Urban Water Use Target (95 percent of the five year average GPCD)	**172**

Figure 26 - City of Calexico 2020 Urban Water Use Target

The Interim Urban Water Use Target for 2015 was calculated using the average of the base line (180GPCD) and 2020 Urban Water Use Target (172GPCD):

Interim Urban Water Use Target for 2015 (average GPCD between the Base Line and Urban Water Use Target)	**176**

Figure 27 - Interim Urban Water Use Target for 2015

Water Demands

Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape;(G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; (I) Agricultural (10631(e)(1) and (2)).

Table 3
Water deliveries — actual, 2005 in MG/year

	2005				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	6,513	1,277	0	0	1,277
Multi-family	492	215	0	0	215
Commercial	536	283	0	0	283
Industrial	2	6	0	0	6
Institutional/governmental	0	0	0	0	0
Landscape	0	0	0	0	0
Agriculture	0	0	0	0	0
Total	7,543	1,781	0	0	1,781

Units (circle one): million gallons per year

Figure 28 - TABLE 3 Water deliveries - actual, 2005

Table 4 Water deliveries — actual, 2010, in MG/year					
	2010				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	7,065	1,150	0	0	1,150
Multi-family	510	163	0	0	163
Commercial	570	213	0	0	213
Industrial	3	0	0	0	0
Institutional/governmental	0	0	0	0	0
Landscape	2	38	0	0	38
Agriculture	0	0	0	0	0
Other	0	2	0	0	2
Total	8,150	1,566	0	0	1,566
Units (circle one): million gallons per year					

Figure 29 - TABLE 4 Water deliveries - actual, 2010

Year	DoF Calexico Population Estimates	Average Per Capita Per Day Use (Gallons)	Calculated Gross Water Use (Million Gallons)	Calculated Gross Water Use (Acre Feet)	Calculated Estimated Daily Water Use (Gallons Per Day) Average
2015	45,563	176	2,926.967	8,983	8,019,088
2020	51,802	172	2,860.445	8,778	7,836,836
2025	58,896	172	3,252.130	9,980	8,909,944
2030	66,960	172	3,697.491	11,347	10,130,112

Figure 30 - Estimated Future Water Demand Table

Table 5 Water deliveries — projected, 2015 in MG/year					
	2015				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	7,983	1,924			1,924
Multi-family	576	421			421
Commercial	644	241			241
Industrial	3	0			0
Institutional/governmental	0	0			0
Landscape	2	43			43
Agriculture	0	0			0
Other					0
Total	9,210	2,629	0	0	2,629
Units: million gallons per year					

Figure 31 - TABLE 5 Water deliveries - projected, 2015

Table 6 Water deliveries — projected, 2020 in MG/year					
	2020				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	9,021	1,950			1,950
Multi-family	651	345			345
Commercial	728	272			272
Industrial	4	1			1
Institutional/governmental	0	0			0
Landscape	3	49			49
Agriculture	0	0			0
Other					0
Total	10,407	2,616	0	0	2,616
Units (circle one): million gallons per year					

Figure 32 - TABLE 6 Water deliveries - projected, 2020

Table 7 Water deliveries — projected 2025, 2030 in MG/year				
	2025		2030	
	metered		metered	
Water use sectors	# of accounts	Volume	# of accounts	Volume
Single family	10,194	2,204	11,519	2,490
Multi-family	736	390	832	441
Commercial	822	307	929	387
Industrial	4	1	5	1
Institutional/governmental	0	0	0	0
Landscape	3	55	3	63
Agriculture	0	0	0	0
Other				
Total	11,760	2,957	13,288	3,381

Figure 33 - TABLE 7 Water deliveries - projected 2025, 2030

Table 9 Sales to other water agencies, in MG/year						
Water distributed	2005	2010	2015	2020	2025	2030
None	0	0	0	0	0	0
Total	0	0	0	0	0	0
Units (circle one): million gallons per year						

Figure 34 – TABLE 9 Sales to other water agencies

Table 10 Additional water uses and losses, in MG/year						
Water use[1]	2005	2010	2015	2020	2025	2030
Saline barriers	0	0	0	0	0	0
Groundwater recharge	0	0	0	0	0	0
Conjunctive use	0	0	0	0	0	0
Raw water	0	0	0	0	0	0
Recycled water	0	0	0	0	0	0
System losses	335	525	298	244	295	316
Other (define)						
Total	**335**	**525**	**298**	**244**	**295**	**316**

Figure 35 – TABLE 10 Additional water uses and losses

Table 11 Total water use, in MG/year						
Water Use	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Total water deliveries (from Tables 3 to 7)	1,781	1,566	2,629	2,616	2,957	3,381
Sales to other water agencies (from Table 9)	0	0	0	0	0	0
Additional water uses and losses (from Table 10)	335	525	298	244	295	316
Total	**2,116**	**2,091**	**2,927**	**2,860**	**3,252**	**3,697**

Figure 36 - TABLE 11 Total water use

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

The following is a table found in the City of Calexico's Housing Element of the General Plan:

TABLE 2.0-12
HOUSEHOLDS BY INCOME CATEGORIES
CITY OF CALEXICO
2007 AMI FOR EL CENTRO MSA = $42,000

Income Category	Income Range	Percent
Extremely Low	Less Than $12,599	15.3%
Very Low	$12,600-$21,000	15.4%
Low	$21,101 - $33,600	20.3%
Moderate	$33,601 - $50,400	20.4%
Above Moderate	Greater Than $50,401	28.6%
Source: HUD, 2007		

Extremely low income represents 15.3 percent and very low represents 15.4 percent of the total households. Using these percentages against the projected demand of Single Family and Multi-Family households, the following are the projected low income demands:

Table 8 Low-income projected water demands				
Low Income Water Demands[1]	**2015**	**2020**	**2025**	**2030**
Single-family residential	296	300	339	381
Multi-family residential	64	53	60	67
Total	361	353	399	448
Units (circle one): million gallons per year *[1]Provide demands either as directly estimated values or as a percent of demand.*				

Figure 37 - TABLE 8 Low-income projected water demands

Water Demand Projections

Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c) (10631(k)).

Table 12 Retail agency demand projections provided to wholesale suppliers Units are in Acre-feet per Year						
Wholesaler	**Contracted Volume[3]**	**2010**	**2015**	**2020**	**2025**	**2030**
Imperial Irrigation District	No Contract	2,091	2,927	2,860	3,252	3,697

Figure 38 - TABLE 12 Retail agency demand projections provided to wholesale suppliers

The above figure includes estimates for demand projections in five-year intervals for the City until 2030 in acre-feet. The estimates are based on projected population growth and per capita water demand. These demands are provided to the IID for planning purposes.

The City does not have a contract with Imperial Irrigation District that limits the amount of water available to the City.

Water Use Reduction Plan

Urban wholesale water suppliers shall include in the urban water management plans . . . an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part (10608.36). Urban retail water suppliers are to prepare a plan for implementing the Water Conservation Bill of 2009 requirements and conduct a public meeting which includes consideration of economic impacts (CWC §10608.26).

The City of Calexico is a member of the California Urban Water Conservation Council (CUWCC). The California Urban Water Conservation Council was created to increase efficient water use statewide through partnerships among urban water agencies, public interest organizations, and private entities. The Council's goal is to integrate urban water conservation Best Management Practices into the planning and management of California's water resources.

The City has conservation guidelines for the requirements found in state legislation under Assembly Bill 1881 that apply to commercial, industrial and tenant occupied residential property that require landscaping greater than 2,500 square feet and homeowner landscaping greater than 5,000 square feet. While for the most part water conservation guidelines only apply to large landscaping projects, the City encourages its application to smaller scale projects in order to conserve water.

The following policies are part of the City's General Plan, in the Conservation/Open Space Element. There are no official Demand Management Measures (DMM):

A. All residential developments shall require low-volume toilets, showers, and faucets.

B. New development projects should install water-conserving appliances (washing machines, dishwashers).

C. The City shall continue to require the use of primarily drought tolerant and/ or native plants in new development through the review and approval process by City staff. The use of turf grass for lawns should be limited.

D. Residential projects having common green areas and all commercial, manufacturing, and public projects shall be required to install automatic irrigation systems. New commercial, industrial, and housing projects that contain common green belts should use reclaimed “grey” water for irrigation.

E. Promote water conservation, reduce urban runoff, and prevent groundwater contamination within development projects, property maintenance, City operations, and all other related activities requiring City discretionary approval.

F. Adopt and enforce regulations and engage in educational efforts to eliminate pollution from runoff.

G. Participate in any pertinent local, regional, state, and federal programs to protect and enhance water quality.

H. Support efforts to improve the water quality of the New River or other proposals aimed at improving the area surrounding the River, such as the development and implementation of an integrated regional water quality management plan that meets the goals and objectives of the Colorado River Basin Regional Water Quality Control Board (Region 7) for the New River.

I. The usage of drip irrigation shall be required where feasible.

J. Alternative water conservation systems such as grey water usage in residences shall be examined and initiated, if feasible.

K. New residential construction shall be preplumbed for reclaimed water through a dual on-site distribution system. Anticipated non-potable uses include landscaping, lawn maintenance and crop irrigation. All reclaimed water systems will be in compliance with the State of California Regional Water Quality board guidelines and basin objectives as well as CEQA and NEPA guidelines.

L. Residential units connected to the community sewage collection system shall not use salt-based water softeners.

Section 4 - System Supplies

Water Sources

Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a) (10631(b)).

Table 16 Water supplies — current and projected						
Water Supply Sources		**2010**	**2015**	**2020**	**2025**	**2030**
Water purchased from[1]:	**Wholesaler supplied volume (yes/no)**					
Imperial Irrigation District (IID)	**Yes**	2,091	2,927	2,860	3,252	3,697
Supplier-produced groundwater[2]		0	0	0	0	0
Supplier-produced surface water		0	0	0	0	0
Transfers in		0	0	0	0	0
Exchanges In		0	0	0	0	0
Recycled Water		0	0	0	0	0
Desalinated Water		0	0	0	0	0
Other						
Other						
Total		**2,091**	**2,927**	**2,860**	**3,252**	**3,697**

Units (circle one): million gallons per year

[1] Volumes shown here should be what was purchased in 2010 and what is anticipated to be purchased in the future. If these numbers differ from what is contracted, show the contracted quantities in Table 17.

[2] Volumes shown here should be consistent with Tables 17 and 18.

Figure 39 - TABLE 16 Water supplies - current and projected

Table 17 Wholesale supplies — existing and planned sources of water					
Wholesale sources[1,2]	**Contracted Volume[3]**	**2015**	**2020**	**2025**	**2030**
Imperial Irrigation District	No Contract	2,927	2,860	3,252	3,697

Units (circle one): million gallons per year

[1]Water volumes presented here should be accounted for in Table 16.
[2]If the water supplier is a wholesaler, indicate all customers (excluding individual retail customers) to which water is sold. If the water supplier is a retailer, indicate each wholesale supplier, if more than one.
[3]Indicate the full amount of water

Figure 40 – TABLE 17 Wholesale supplies – existing and planned sources of water

The City of Calexico has been supplying potable drinking water since the early years of the 1900's when water became available from the Colorado River. Calexico receives its drinking water from the Colorado River via the Imperial Irrigation District's (IID) All-American Canal and the Central Main Canal that run south of the city limits. The South Date Canal and the Dahlia Lateral Number 1 run north from the Central Main Canal and supply the water treatment facility. The raw water is stored in reservoirs until undergoing treatment.

The City of Calexico depends solely on the Colorado River for surface water inflows, supplied by the Imperial Irrigation District. The Imperial Irrigation District imports the raw Colorado River water and distributes it to the City and for agricultural purposes. Water from agricultural drains, the New and Alamo Rivers are high in total dissolved solids and other contaminants and are unsuitable for potable water use.

The City treats the raw surface water to meet state and federal drinking water standards before distribution.

Agricultural Drains

As part of its operating system, the IID maintains an extensive drainage system. Agricultural and storm water drainage is provided by the Alamo and New Rivers, over 1,405 miles of IID open drains and drainage pumps and over 34,400 miles of landowner tile drains. The ultimate repository for drainage water from the IID is the Salton Sea. With a surface area of about 383 square miles (or 245,000 acres), it is California's largest lake. The Salton Sea receives approximately 1,100,000 acre-

feet of drainage flows annually (since 2003) from Imperial, Coachella and Mexicali Valleys, as well as rainfall, storm runoff from the surrounding mountains and groundwater inflow.

There are three general categories which describe the surface water in Imperial Valley. These are freshwater, brackish water, and saline water. The freshwater (with TDS generally less than 1,000 ppm) include the All-American Canal and other canals and laterals which deliver irrigation water to the agricultural fields within the County. The brackish waters (with TDS in the range of 2,000 to 4,000 ppm) include the Alamo River, New River and the agricultural drains that flow into these rivers or directly into the Salton Sea.

The Salton Sea represents the saline water category. Salinity concentrations have been rising and are currently higher than ocean water (the Salton Sea's current TDS was approximately 53,000ppm in 2010 vs. an average of 34,000ppm for ocean water). The Salton Sea evaporates between eight and nine feet per year. The surface waters in Imperial Valley thus pass through a salinity gradient from the Colorado River to the Salton Sea.

This regional salinity gradient exists because of the high evaporation of the Imperial Valley, high temperatures, low annual rainfall, and continual leaching of salts from irrigated areas due to the high salinity of the Colorado River Water (approximately 750ppm). Evapotranspiration is water transported and evaporated from plants and surrounding soil surfaces. Although water is continually evaporated from the major canals, this evaporation represents a relatively minor increase in dissolved solids concentration because of the short residence times within the water conveyance system.

Normal evapotranspiration rates from the irrigated fields from efficient irrigation practices substantially reduce the amount of water and increase the concentration of salt entering the drainage system. For these reasons and due to salinity within the soils, a 300% to 500% increase in total dissolved solids concentration is normal within the Imperial Unit as water is efficiently applied to agricultural lands from the All-American Canal and is conveyed to the IID drains, the New River and the Alamo River, and eventually to the Salton Sea.

The increase in salinity is extremely important because it affects the aquatic

ecosystems. However, salinity is not the only water quality issue. The intensive irrigation in the valley presents the potential for the introduction of agricultural chemicals, such as pesticides and herbicides, into downstream waters. Field erosion and dredging activities also result in siltation in the New and Alamo Rivers and the Salton Sea. The bacteriological quality of these waters is also a concern because these streams receive locally generated municipal waste discharges, in addition to the waste load entering the United States from Mexico.

New River

The New River originates in Mexico, and flows northward across the International Boundary into Imperial Valley.. The flow continues through the Imperial Valley and ultimately discharges into the Salton Sea. The primary purpose of the New River is to convey agricultural drainage in the Imperial and Mexicali valleys to the Salton Sea. A corollary use of the New River is to convey treated community and industrial wastewaters. This corollary use is strictly controlled in the Imperial Valley by waste discharge requirements prescribed and enforced by the California Regional Water Quality Control Board. However, Mexico's corollary use of the New River is largely ignored and uncontrolled.

Mexico discharges raw and inadequately treated sewage, toxic industrial wastes, garbage and other solid wastes, animal wastes, and geothermal wastewaters out of the Mexicali area of Mexico and into the Imperial Valley. This process has continued for over forty years, resulting in the on-going pollution of the New River at the International Boundary. As Mexico's industry and population continue to grow, these problems have a high potential to increase if corrective measures are not taken.

Until August of 1983, the problem of Mexico polluting the New River had been the responsibility of United States Section of the International Boundary and Water Commission (IBWC), a joint United States/Mexico federal agency with responsibility for dealing with border water and sanitation problems between the two nations.

Over a period of thirty years, the California Regional Water Quality Control Board made several representations to the United States Commissioner on the IBWC to obtain corrections to the problem. Since 1975, the California Regional Water Quality Control Board has been monitoring water pollution of the New River to identify the pollutants actually coming from Mexico. This information is presented to the United

States Commissioner to aid and encourage Mexico in implementing corrective measures.

In August of 1980, Minute No. 264 to the Mexico-American Water Treaty was signed, which specified time schedules for completing work that was to result in a full cleanup of the river. In addition, minimum water quality standards were specified for New River water quality at the International Boundary. Mexico has been in violation of practically all of the specified schedules and standards since Minute No. 264 went into effect in December of 1980. There is no evidence that Minute No. 264 has had any influence on actions in Mexico to clean up the river.

In July of 1983, the California Regional Water Quality Control Board conducted an investigation. The purpose of the investigation was to determine the type(s) and extent of waste discharges into the New River and its tributaries from Mexico so that possible corrective action could be considered and pursued. The investigation identified problems that must be addressed to obtain adequate corrections. These problems included:

1. City sewer lines which are not connected to the City's main sewer system discharging raw sewage to the river;
2. Breakdowns in the sewer system resulting in the discharge of raw sewage to the river;
3. Discharge of wastes to the river by septic tank pumpers;
4. Discharge of wastes to the river from adjacent unsewered residences;
5. Discharge of untreated industrial wastes to the river including highly toxic chemicals wastes, many of which are on the Environmental Protection Agency's list of 129 priority pollutants and some of which are carcinogens;
6. Inadequate treatment of sewage and industrial wastes by Mexicali, whose sewage treatment plant consists of nothing more than raw sewage lagoons;
7. Location of the City's garbage dump such that refuse is disposed of directly into the river water;
8. Discharges of untreated wastes from a slaughterhouse, dairy, and hog farms;
9. Discharges from residential hog and cattle pens located adjacent to the river and its tributaries; and
10. Discharge of geothermal wastes to the river.

In August of 1983, a United States/Mexican Agreement for protection and improvement of the environment in the border area was signed by the Presidents of Mexico and the United States. Under this agreement, responsibility for border environmental problems, including the New River pollution problem, was transferred from the International Boundary and Water Commission to the United States Environmental Protection Agency for the United States, and to the Mexican Secretarial de Desarollo Urbano y Ecologia (SDUE) for Mexico. Since this transfer of responsibility, progress has been slow and it is questionable if the agreement has served any useful purpose in controlling pollution in the New River.

In April of 1987, Minute No. 274 to the Mexican-American Water Treaty was approved by the United States and Mexico. The minute provided for a $1.2 million United States/Mexico jointly funded project to construct certain works in Mexico to reduce pollution in the New River. Although this project is just a step towards resolving the pollution problems of the New River, it sets a precedent for the involvement of the United States in the implementation of corrective actions within Mexicali.

According to the International Boundary and Water Commission of the United States, additional projects are needed to help reduce water pollution from Mexico. Mexico and the United States are currently negotiating measures to solve the problem. Upon agreement between both governments, a new Minute will be approved and added to the Mexican-American Treaty to supersede Minute No. 274. The main goal of the new Minute would be to establish a long-term solution to the water pollution problem.

The Alamo River is also polluted with contaminants. A small amount of groundwater seepage from agricultural fields crosses into Imperial Valley from Mexico to the Alamo River and has low pollutant concentrations.

The main pollutants in the water are pesticides which get drained into the Alamo River during irrigation. However, the potential for polluting the Alamo River could increase not only from the pesticides contained in the water but from potential development at or near the Alamo River at the International Boundary, such as the new border crossing that has been constructed near the Alamo River as it crosses into the United States.

This new border crossing could create an urban sprawl effect in this area of Imperial Valley, which would increase drainage into the Alamo River. The Alamo River

currently has a small concrete culvert that passes underneath the All-American Canal which drains seepage water coming from Mexico. Additional flows could impact the river and present a financial burden to Imperial Valley and lead to environmental health problems.

An option proposed by the California Regional Water Quality Control Board has been to shunt the Alamo River into a drainage system which would eventually drain into the New River before it crosses into the United States. In order for this to happen, both governments must agree. Presently, nothing has been settled but further negotiations are currently being reviewed between the United States and Mexico, in hopes to minimize potential problems that could result from the development of the new border crossing.

Surface Water from the Colorado River

Water is supplied to the City from the All-American Canal through the Central Main Canal. The supply point for the water plant is the South Date Canal and the Dahlia Lateral Number 1. Both of these canals flow north from the Central Main Canal. The South Date Canal runs immediately east of the treatment facility and has capacity to deliver 22.6 million gallons per day (MGD) of untreated water to the plant.

The Dahlia Lateral Number 1, located west of the plant, is capable of supplying the plant with an additional 9.0 mgd. The Dahlia Lateral has been used as a water source more during the last few years. This is because it has fewer services drawing water from it than the South Date Canal. It maintains a steadier flow and is a more reliable source. The capacity of water delivery from the Dahlia Lateral is limited due to the size of gate 18A and the back pressure of the Lateral. The total amount of raw water that can currently be supplied to the City is 31.6 mgd (35,755 acre-feet per year).

Rainfall average is less than three inches per year and does not contribute to Imperial Irrigation District's water supply, although at times it may reduce agricultural water demand.

As the City grows and develops on existing agricultural land, theoretically there will be more supply of water available. Agriculture requires more raw water per acre than developed land.

Municipal water is not a large portion of the total water delivered by the IID. It represents only approximately three percent (3%) of the total water delivered. The total municipal use has not significantly changed since 2006. Figure 42 shows the total water delivered. Since the portion of water used by the municipalities is low compared to the overall use, it is not anticipated that there will be any shortage of raw water from the IID. The city's main constraint of raw water availability is in the raw water inlet piping capacity. As was mentioned earlier, the total amount of raw water that can currently be supplied by the IID to the City is 31.6 MGD (35,755 acre-feet per year) which is more than enough capacity for the foreseeable future.

Year	IID Net Consumptive Use Amount (Total Imperial Valley) (AF)	Total Municipal Use (AF)	Total Other Non-Agricultural Use (AF)	Total Agricultural Use (AF)
2010	2,363,800	50,819	54,749	2,258,232
2015	2,236,300	55,877	66,382	2,114,041
2020	2,316,300	61,397	78,015	2,176,888
2025	2,284,300	67,335	85,558	2,131,407
2030	2,279,300	71,233	93,101	2,114,966

Figure 41- IID Consumptive Use Amount vs. Total Municipal Use

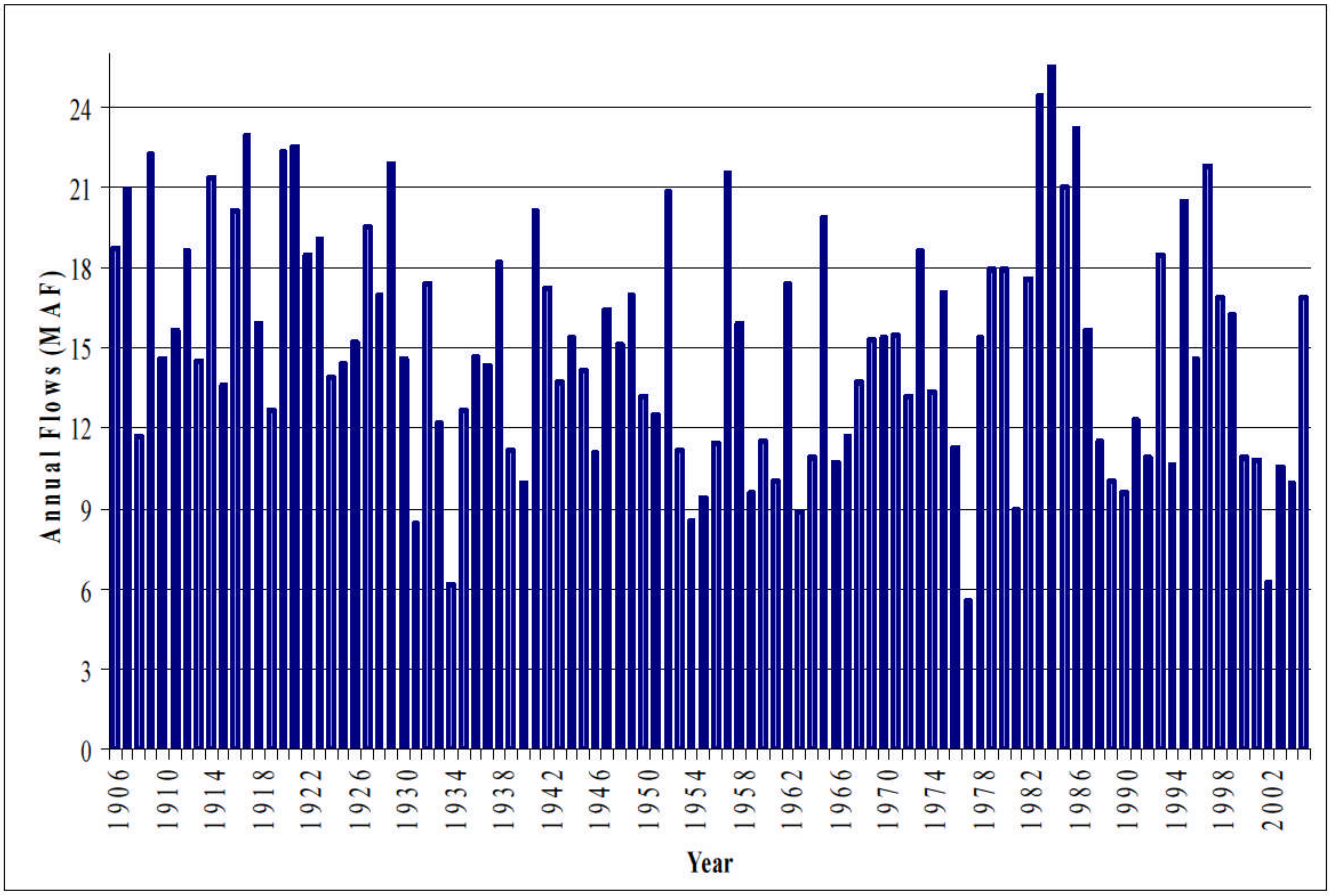

Figure 42 – Colorado River Annual Flows (MAF) 1906-2002

Colorado River Reliability

Under the Law of the River, IID has significant historical legal protections in place to maintain its 3.1 MAF Priority 3a water right to consumptive use of Colorado River water even during lower Colorado River flow periods.

Historical Data on the Colorado River Water Supply

The Colorado River flow at Lees Ferry has been gauged since 1921. By removing reservoir and diversion effects, the USBR has created a “natural flow” record for this site. The long-term (1906- 2004) average natural flow is estimated to be about 15.1 MAF based on the gage record. The annual natural flow records are shown in Figure 2. A few important points should be noted from the natural flow record:

(1) The period 1906-1930 and prior was the available gauge record when many of the Colorado River compacts were drafted. This period had a 10-year running average flow of about 17.0 MAF, which is higher than almost any other period in the gage record.

(2) The 10-year running average from 1934 to 1984 was almost always less than 15 MAF, meaning that the 1922 Compact apportioning 7.5 MAF to the Upper and Lower Basins could not have been fully satisfied for most of this 50-year period.

(3) Allocations from the Colorado River total 16.5 MAF, divided as 7.5 MAF each to the Upper and Lower Basins, and 1.5 MAF to Mexico. The long-term average natural flows from the gauge record are less than these total allocations.

Imperial Irrigation District Water Use

The Imperial Irrigation District provides wholesale water service. Demand for water in the Imperial Unit service area is divided into three basic categories: agricultural, municipal, and industrial. Presently the Imperial Irrigation District delivered approximately 97% of its annual flows to agricultural water users, 2% to municipalities, and 1% percent for industrial purposes.

The Imperial Irrigation District's consumptive use values include the total use of raw water in the Imperial Unit. These consumptive use values include agriculture, small acreage, service laterals, municipalities, industrial, losses and unaccounted raw water. There is no available data that completely distinguishes between these uses of raw water.

Water distribution systems “lose” water during distribution for several reasons. Specific water distribution “losses” depend on the type of distribution system. A piped water distribution system can lose water due to pipe failures or leaks. Open channels, ponds, reservoirs, and water basins can “lose” water from seepage through the soil, surface evaporation into the air, and plant consumptive use.

An open channel, gravity flow water distribution system has operational spill. Operational spills are excess flows discharged from a channel into a drain or other sump (Salton Sea). Operational spills can result from: carriage water that is required

to fill and empty the reaches of sloping channels; increases in water user flexibility for water ordering and delivery scheduling; and terminating water deliveries during rainfall events, storm runoff, and flood flows.

The Imperial Irrigation District has an open channel gravity flow water distribution system. Its water distribution system losses result from three major conditions: seepage, operational spills, and evaporation. The Imperial Irrigation District's water distribution system losses have been reduced through the years by numerous water conservation and demand management programs and projects. The demand management programs and projects are described in detail in the Imperial Irrigation District Demand Management Section of this plan.

Agricultural Water Use in the Imperial Valley

Over 120 types of crops are grown in the Imperial Valley. Most relevant to the Water Element is an examination of the various crop types, the acreage dedicated to each and the demand for irrigation water generated by each crop per acre of cultivation. Water demand is provided below on a net consumption basis and is based upon historical acreage and water use data. Major water consuming crops include alfalfa (5.20 ac.ft./acre), asparagus (4.12 ac.ft./acre), cotton (3.45 ac.ft./acre), and tomatoes (2.23 ac.ft/acre). More efficient crops include carrots (1.21 ac.ft./acre), squash (1.58 ac.ft./acre), and barley (1.64 ac.ft./acre). Since the 2000’s 500,000 acres are in cultivation over the year including double cropping. Crops grown on this acreage consume approximately 1,500,000 acre-feet per year. Figure 46 shows the historical average of individual crop acreage and water use in Imperial Valley over a ten year period.

Approximately ninety-seven percent of the water imported into Imperial Valley from the Imperial Irrigation District is used for agricultural purposes. Imperial Irrigation District supplies more than 2,500,000 acre-feet of water annually for primarily agricultural purposes to its customers in Imperial Valley, to just over 500,000 acres of irrigated farmland (double cropped).

Crop	Area (Acres)	Water Use (af)
Garden Crops	**1985**	
Broccoli	7,000	11,480
Carrots	12,000	14,540
Lettuce	35,000	47,017
Cantaloupes	15,000	33,213
Watermelons	5,000	10,929
Other Melons	4,000	8,903
Onions	10,000	17,725
Squash	1,000	1,578
Tomatoes	3,000	6,695
Vegetables (misc.)	5,000	8,083
Field Crops		
Alfalfa	185,000	961,692
Barley	1,000	1,650
Bermuda Grass	15,000	52,125
Cotton	40,000	137,900
Rye Grass	4,000	9,500
Sorghum	3,000	7,330
Sudan Grass	20,000	47,500
Sugar Beets	35,000	122,208
Wheat	105,000	204,488
Miscellaneous	2,000	4,695
Permanent Crops		
Asparagus	3,000	12,355
Citrus Fruits	2,000	7,163
Duck Ponds (feed)	8,000	24,000
Jojoba	3,000	10,745
Trees and Vines	1,000	3,582
Miscellaneous	1,000	3,982
Source:	Water Requirements and Availability Study. Prepared by Parsons Water Resources, Inc. for the IID. November 1985.	

Figure 43 - IID Crop Acreage and Water Use in Imperial Valley (Historical Average)

Imperial Irrigation District Supply

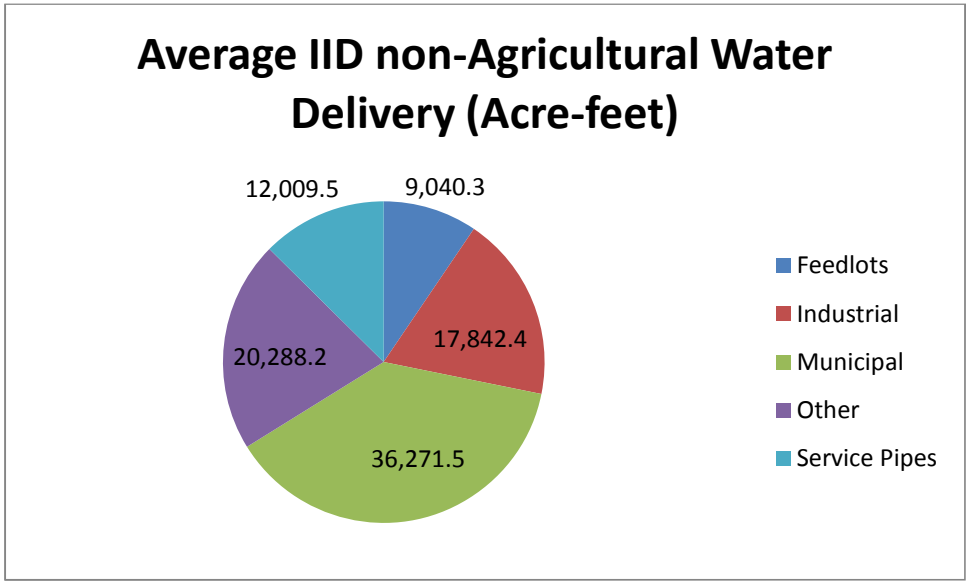

Figure 44 - Non Agricultural Water Delivery by the IID (Acre-Feet) 2006-2009

IID Non-Agricultural Water Delivery (**Acre-feet**)					
	2006	2007	2008	2009	Average
Feedlots	5,004.6	5,222.5	11,889.1	14,045.0	9,040.3
Industrial	18,398.6	17,424.9	18,447.0	17,099.2	17,842.4
Municipal	35,942.3	36,404.6	36,236.1	36,503.1	36,271.5
Other	20,563.6	21,342.6	19,988.1	19,258.5	20,288.2
Service Pipes	12,001.3	12,001.3	12,034.2	12,001.2	12,009.5
Total	**91,910.4**	**92,395.9**	**98,594.5**	**98,907.0**	**95,452.0**

Figure 45- IID Non-Agricultural Water Delivery

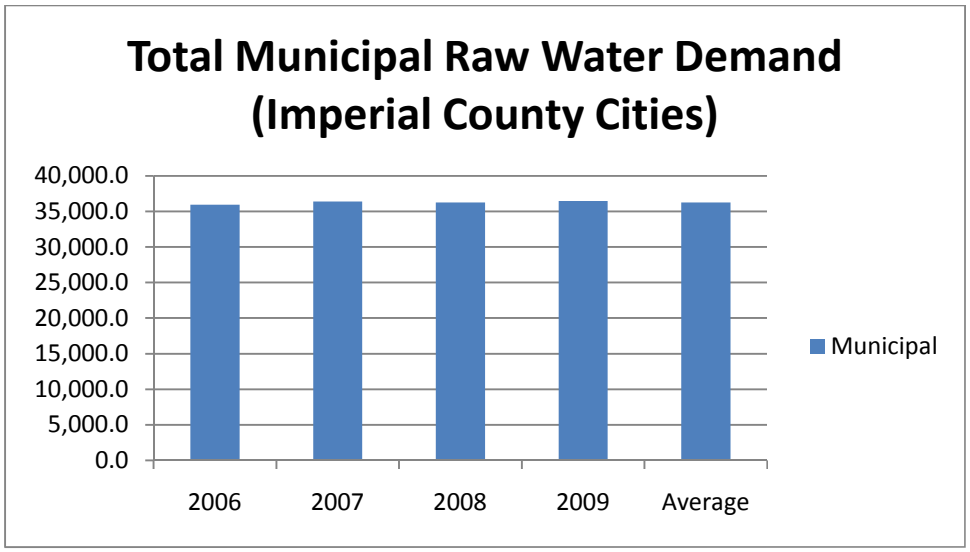

Figure 46 – Total Municipal Raw Water Demand (Imperial County Cities) since 2006 (Acre-Feet)

IID Water Balance Imperial Unit (**Acre-feet**)					
	2006	2007	2008	2009	Average
Agricultural	2,366,591.9	2,320,920.8	2,413,609.8	2,279,083.9	2,345,051.6
Non-Agricultural	91,910.4	92,395.9	98,594.5	98,907.0	95,452.0
Salton Sea Mitigation Water	0.0	22,399.7	24,793.9	28,989.3	19,045.7
Seepage (Delivery)	86,000.4	86,000.4	79,728.5	64,995.1	79,181.1
Seepage (AAC)	219,861.1	248,816.5	299,527.3	573,644.5	335,462.4
Main Canal Spill	1,638.5	2,212.9	2,422.8	2,248.2	2,130.6
Lateral Spill	118,999.0	112,567.0	117,610.9	106,496.9	113,918.5
Net Evaporation	24,518.4	24,092.3	24,147.0	24,038.1	24,199.0
Total	**2,909,519.7**	**2,909,405.5**	**3,060,434.7**	**3,178,403.0**	**3,014,440.9**

Figure 47 - Total Estimated Water Flow by the IID

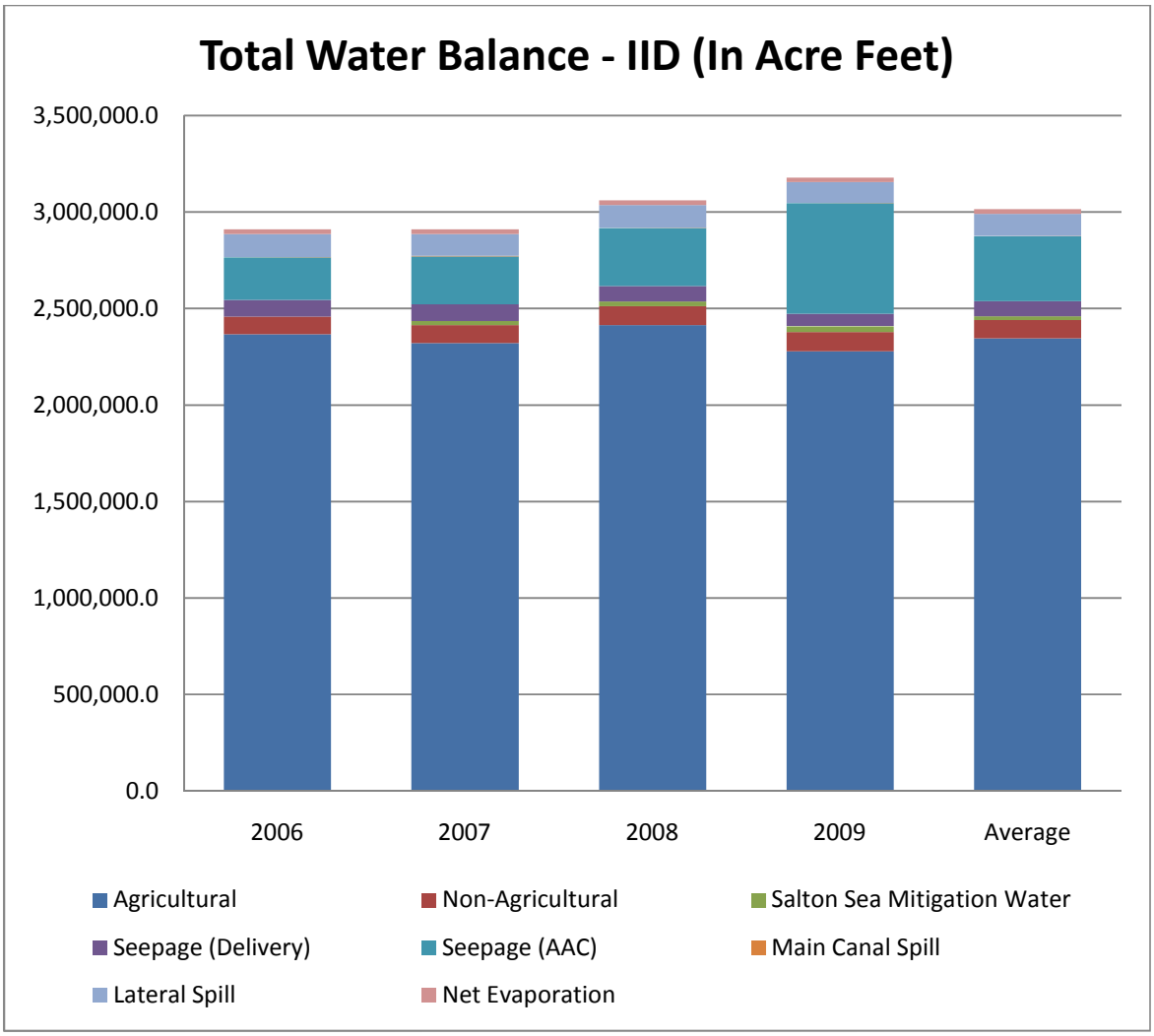

Figure 48 - Graphical Representation of the Total Water Balance IID Water Use (data in Figure 50)

Water Rights

IID has a longstanding right to import Colorado River water, and holds legal title to all its water and water rights in trust for landowners and water users within the District (California Water Code §§20529 and 22437; Bryant v. Yellen, 447 U.S. 352, 371 (1980), fn.23.). These date from as early as 1885, when a number of individuals, as well as the California Development Company, made a series of appropriations of Colorado River water pursuant to stipulations of California law for use in the Imperial Valley.

The right to water from the Colorado River is governed by numerous compacts,

state and federal laws, court decisions and decrees, contracts, and regulatory guidelines collectively known as the "Law of the River." These documents apportion the water and regulate the use and management of the Colorado River among the seven basin states and Mexico. A brief review of those parts that impact the Imperial Irrigation District follows:

Colorado River Compact (1921)

In 1921, representatives from the seven Colorado River basin states, with the authorization of their legislatures and at the urging of the federal government, began negotiations regarding the distribution of water from the Colorado River. In November of 1922, the representatives from the upper basin states (Colorado, New Mexico, Utah and Wyoming) and lower (Arizona, California, and Nevada) signed the Colorado River Compact (Compact), an interstate agreement giving each basin perpetual rights to annual apportionments of 7.5 million acre-feet (MAF) of Colorado River water.

Boulder Canyon Project Act (1928)

The Compact was made effective by provisions in the 1928 Boulder Canyon Project Act, which authorized construction of Hoover Dam and the All-American Canal, and served as the United States' consent to accept the Compact. Officially enacted on June 25, 1929, through a Presidential Proclamation, this act resulted in ratification of the Compact by six of the basin states and required California to limit its annual consumptive use to 4.4 MAF of the lower basin's apportionment plus not less than half of any excess or surplus water unapportioned by the Compact. Arizona refused to sign and subsequently filed a lawsuit. California abided by this federal mandate through the implementation of its 1929 Limitation Act. The Boulder Canyon Project Act further authorized the Secretary to "contract for the storage of water... and for the delivery thereof for irrigation and domestic uses," and further defined the lower basin's 7.5 MAF apportionment split, with an annual allocation of 0.3 MAF to Nevada and 2.8 MAF to Arizona. While the three states never formally accepted or agreed to these terms, a 1964 Supreme Court decision (Arizona v. California, 373 U.S. 546) declared their consent to be inconsequential since the Boulder Canyon Project Act was authorized by the Secretary.

California Seven-Party Agreement (1931)

Following implementation of the Boulder Canyon Project Act, the Secretary requested that California make recommendations regarding distribution of its allocation of Colorado River water. In August 1931, under chairmanship of the State Engineer, the California Seven-Party Agreement was developed and authorized by the affected parties to prioritize California water rights. The Secretary accepted this agreement and established these priorities through General Regulations issued in September of 1931. The first four priority allocations account for California's annual apportionment of 4.4 MAF, with agricultural entities using 3.85 MAF of that total. The remaining priorities are defined for years in which the Secretary declares that excess waters are available.

Arizona v. California US Supreme Court Decision (1964, 1979)

In 1963, the Supreme Court issued a decision settling a 25-year-old dispute between Arizona and California, which stemmed from Arizona's desire to build the Central Arizona Project to enable use of its full apportionment. California argued that Arizona's use of water from the Gila River, a Colorado River tributary, constituted use of its Colorado River apportionment, and that California had developed a historical use of some of Arizona's apportionment, which, under the doctrine of prior appropriation, precluded Arizona from developing the project.

The Supreme Court rejected California's arguments, enjoined the Secretary from delivering water outside the framework of apportionments defined by the law, and mandated the preparation of annual reports documenting the consumptive use of water in the three lower basin states. In 1979, the Supreme Court issued a Supplemental Decree which addressed Present Perfected Rights (PPRs) referred to in the Colorado River Compact and in the Boulder Canyon Project Act. These rights are entitlements essentially established under state law, and have priority over later contract entitlements.

On March 27, 2006, the Supreme Court issued a Consolidated Decree to provide a single reference to the provisions of the original 1964 decrees and several subsequent decrees (1966, 1979, 1984, and 2000) that stemmed from the original ruling. This decree also reflects the settlements of the federal reserved water rights claim for the Fort Yuma Indian Reservation.

Colorado River Basin Project Act (1968)

Congress authorized construction of a number of water development projects in both the upper and lower basins, including the Central Arizona Project (CAP) in 1968. The act made the priority of the CAP water supply subordinate to California's apportionment in times of shortage, and directed the Secretary to prepare, in consultation with the Colorado River Basin states, long-range operating criteria for the Colorado River reservoir system.

Quantification Settlement Agreement (QSA) and Related Agreements

The Quantification Settlement Agreement (QSA) and Related Agreements that became effective in October 2003 are a set of inter-related contracts that settle certain disputes among the United States, the State of California, Imperial Irrigation District (IID), Metropolitan Water District (MWD), Coachella Valley Water District (CVWD) and the San Diego County Water Authority (SDCWA) that became effective in October 2003. The agreements resolve, for a period of 35 to 75 years, issues regarding the reasonable and beneficial use of Colorado River water; the ability to conserve, transfer and acquire conserved Colorado River water; the quantification of Priorities 3 and 6 within California for the use of Colorado River water; and the obligation to implement and fund environmental impact mitigation related to the above.

Conserved water transfer agreements between IID and SDCWA, IID and CVWD and IID and MWD are all part of the QSA and Related Agreements. These contracts identify the conserved water volumes and transfer schedules for IID along with price and payment terms. As specified in the agreements, IID will transfer to SDCWA up to 200,000 AFY, and to CVWD up to 103 AFY, and MWD 105,000 Acre AFY of water conserved from delivery system improvements and on-farm efficiency improvements, all in return for payments totaling billions of dollars. In addition, IID will transfer up to 67,000 AFY of conserved water from the lining of the All-American Canal to SDCWA and certain San Luis Rey Indian Tribes 16,500 AFY in exchange for the payment of all lining project costs and a grant to IID of certain rights to use the conserved water.

As a result of the QSA and Related Agreements, IID will be able to more efficiently deliver Colorado River water to the Imperial Valley. Imperial Valley water users will

be able to more effectively irrigate their farms, thus preserving Imperial Valley water rights and agricultural output, with costs and impacts compensated by the payments to IID for the conserved water. IID will face minimum future risk from challenges to the purpose or reasonableness of IID's water use, and thus enable the Imperial Valley to rely upon the large senior Colorado River water rights IID possesses.

In short, the QSA and Related Agreements provide the methods and the means to allow IID to elevate its Colorado River water use to efficient 21st Century standards and ensure the continued availability.

In October 2003, all the water districts, the State and the Interior reached agreement on the final terms of the QSA and related agreements. For closure among State interests, three elements proved critical. First, the IID, SDCWA, CVWD and MWD agreed to provide four sources of economic support for Salton Sea restoration: (1) conditional new transfers between the IID/CDWR and CDWR/MWD as described in the succeeding paragraph; (2) conditional reassignment of mitigation water to CDWR for resale to MWD at a price of $250/AF (in 2003 dollars) per acre-foot delivered to the Salton Sea, provided that the reassignment is consistent with the restoration of the Salton Sea and satisfies other conditions; (3) a joint contribution by the IID, CVWD, and SDCWA to the Salton Sea Restoration Fund established by the California Legislature with payments totaling a present value of $30 million; and (4) payment by MWD to a Salton Sea Restoration Fund of $20 (in 2003 dollars) per acre-foot for all special surplus water MWD receives from the reinstatement of the Interim Surplus Guidelines.

As part of the final negotiations, the IID and CDWR entered into a conditional agreement for the IID to sell CDWR an aggregate of 800,000 acre-feet of conserved water, through the year 2017 for delivery to the Salton Sea as mitigation for impacts of the SDCWA transfer. CDWR is responsible for all mitigation costs, including environmental and any socioeconomic impacts from land fallowing used to make water available to CDWR. The water will be sold to CDWR at a price of $175/acre foot (in 2003 dollars). Therefore, the price received by the IID in any year equals $175/acre foot adjusted by changes in a contractually defined price index from 2003 to the year of delivery.

Compromise IID QSA Delivery Schedule (KAF)									
		Delivery				Conservation Practice			
	1	2	3	4	5	6	7	8	9
Agreement Year	Calendar Year	IID to SDCWA	IID to CVWD	IID to MWD	Total Delivery (Col 2+3+4) or (Col 6+7)	Efficiency for Delivery	Fallowing for Delivery	Fallowing for Mitigation	Total Fallowing (Col 7+8)
4	2006	40	0	0	40	-	40	20	60
5	2007	50	0	0	50	-	50	25	75
6	2008	50	4	0	54	4	50	25	75
7	2009	60	8	0	68	8	60	30	90
8	2010	70	12	0	82	12	70	35	105
9	2011	80	16	0	96	16	80	43	120
10	2012	90	21	0	111	21	90	45	135
11	2013	100	26	0	126	46	80	70	150
12	2014	100	31	0	131	47	60	90	150
13	2015	100	36	0	136	96	40	110	150
14	2016	100	41	0	141	121	20	130	150
15	2017	100	45	0	145	145	0	150	150
16	2018	130	63	0	193	193	0	0	0
17	2019	160	38	0	228	228	0	0	0
18	2020	192.5	73	2.5	268	268	0	0	0
19	2021	205	78	5	288	288	0	0	0
20	2022	202.5	83	2.5	288	288	0	0	0
21	2023	200	88	0	288	288	0	0	0
22	2024	200	93	0	293	293	0	0	0
23	2025	200	98	0	298	298	0	0	0
24	2026	200	103	0	303	303	0	0	0
25	2027	200	103	0	303	303	0	0	0
26	2028	200	103	0	303	303	0	0	0
27-45	2029-2047	200	103	0	303	303	0	0	0
46-75	2048-2077	200	50	0	250	250	0	0	0

Figure 49 – IID QSA Delivery Schedule

QSA by and among IID, MWD, and CVWD, Exhibit C, http://www.iid.com/Media/Quantification-Settlement-Agreement(QSA-among-IID,-MWD,-and.pdf , (p 39 of 44)

Canal Lining Projects

In 1986, Congress passed Public Law 100-675 that governs the allocation of water conserved by the lining of the All-American and Coachella canals and assigns responsibility for the repayment of costs. Water conserved by these projects was to be made available to the IID, CVWD, and MWD in accordance with the priorities established under the Seven-Party Agreement. Parties who use the conserved water were to reimburse the party constructing the project for an apportioned share the amortized capital costs, plus an apportioned share of the costs of operation, maintenance, and any net costs the lining projects impose on IID. In 1988, Congress authorized the Secretary of the Interior to develop a well field or construct a new lined canal or line previously unlined portions of the All-American Canal in southeastern California, and to enter into an agreement with the MWD and/or certain other California water agencies to fund the lining project. The canal is owned by the United States. An estimated 67,700 acre-feet of water a year that was lost by seepage into groundwater from unlined portions of the canal is expected to be saved by this project and made available for use according to the terms of the QSA and related agreements.

On September 25, 1998, the California Legislature passed Senate Bill 1765 authorizing the sum of $200 million be used by the Director of CDWR to finance and arrange for lining portions of the All-American and Coachella Canals. The "Agreement for the Funding of the All-American Canal Lining Project" was developed by the IID and CDWR, and approved by the Board of Directors of the IID on July 24, 2001. Pursuant to the agreement with CDWR, CDWR will reimburse the IID for all costs up to $126 million associated with the canal lining project. The project also qualifies for an additional $9.5 million of Proposition 50 funding approved in the November 2002 general election. The total amount of funding reserved for the canal lining project from the State of California is $135.5 million.

All-American Canal

The All-American Canal (AAC) is the Imperial Valley's lifeline from the Colorado River. In 2008, 2,878,320 acre-feet of Colorado River water was accounted for by water balance through the All-American Canal to nine cities and 475,000 acres of farmable lands throughout the Imperial Valley.

Considered an engineering marvel, even by today's standards, the 80-mile gravity-

flow All-American Canal begins at Imperial Dam on the Colorado River about 20 miles northeast of Yuma, Arizona. Dropping a total of 175 feet between Imperial Dam and IID's Westside Main Canal, the All-American Canal extends south and then west, parallel to the Mexican/American border much of the way.

Crossing 14 miles of sand dunes on the east side of the Imperial Valley, the All-American Canal ends in the southwest corner of the Imperial Irrigation District's delivery area. The AAC until 2009 was unlined, resulting in an estimated 67,700AFY in seepage. The All-American Canal Lining Project included 23 miles of concrete lining.

The Project consisted of the planning; environmental compliance and permitting activities; preparation of schedules, plans, specifications and cost estimates; administration; design; construction; and implementation of environmental mitigation measures required to construct the 23-mile concrete lined canal parallel to the existing earthen canal, from one mile west of Pilot Knob to Drop 3. The new concrete lined section of the AAC is expected to conserve 67,700 acre-feet per year of Colorado River water that was historically lost to seepage, mainly into Mexico.

The new section of concrete lined AAC was constructed parallel to the existing AAC alignment using conventional construction methods and now permitted the current unlined section of the AAC to remain in service and to provide normal water deliveries to IID customers during construction. IID operates and maintains the Project in accordance with its existing contract with USBR. Construction was completed in 2009.

Colorado River Environmental Considerations

Several fish species and other wildlife species either directly or indirectly have the potential to affect Colorado River options, thus changing power operations and the amount of water deliveries to the lower basin. A number of species that are on either endangered or threatened lists under the Endangered Species Act are present in the area of the Lower Colorado River, including among others, the bonytail chub, razorback sucker, southwestern willow flycatcher and Yuma clapper rail. To address this issue, a broad-based State/Federal/tribal/private regional partnership has been formed, which includes water, hydroelectric power and wildlife management agencies in Arizona, California and Nevada. The objective is to accommodate current water diversions and power production and optimize

opportunities for future water and power development while working toward the conservation of habitat and toward recovery of the endangered species. These efforts also have the objective of reducing the likelihood of additional "threatened/endangered" species listings.

Operations of the Water System

The Water Control Section of the IID's Water Department is responsible for the transmission of water through the main canal system and its diversion to the laterals for distribution to the users. Water distribution is a complicated task that involves adjusting the appropriate check, delivery and other structures. There are approximately 3,400 check structures and 5,600 irrigation delivery structures within the system. A coordinated procedure has evolved to handle this complex distribution process.

Groundwater

Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a) (10631(b)).

Table 18 Groundwater — volume pumped						
Basin name(s)	**Metered or Unmetered[1]**	**2006**	**2007**	**2008**	**2009**	**2010**
Imperial Valley	0	0	0	0	0	0
Total groundwater pumped		0	0	0	0	0
Groundwater as a percent of total water supply		**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Units (circle one): acre-feet per year
[1]Indicate whether volume is based on volumeteric meter data or another method

Figure 50 - TABLE 18 Groundwater - volume pumped

Table 19 Groundwater — volume projected to be pumped					
Basin name(s)	**2015**	**2020**	**2025**	**2030**	**2035 - opt**
Imperial Valley	0	0	0	0	0
Total groundwater pumped	0	0	0	0	0
Percent of total water supply	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Units (circle one): acre-feet per year
Include future planned expansion

Figure 51 - TABLE 19 Groundwater - volume projected to be pumped

Groundwater is generally unusable for municipal potable water supplies or irrigation in the Imperial Valley. The salinity, or total dissolved solids count, is too high.

The deepest groundwater is in some cases is believed to be moderately altered ocean water. Above this level, the water may consist of residuals from prehistoric fresh water lakes that filled the Salton Trough. Waters at this level vary from low to moderate salinity. The next higher layers are high temperature, and in places highly saline waters.

In the central part of the Imperial Valley, the groundwater has a higher salinity than the Colorado River water, which has an approximate salinity of 750mg/L. Most wells had total dissolved solids concentrations of between 1,000 and 3,000 mg/L. The ionic composition of the water in the central part of the valley is similar to that of the East Mesa. However, as the total dissolved solids concentration increases, the ionic composition becomes more dominated by sodium chloride. The pH of these waters is usually slightly basic, with an occasional value less than seven.

In the western section of the valley, water quality varies widely. Almost all of the wells in Coyote Valley have total dissolved solids concentrations below 500 mg/L; however, West Mesa wells have levels between 1,800 and 5,200 mg/L.

The shallow aquifers beneath the Imperial Valley are affected by canal seepage and deep percolation of applied irrigation water (raw Colorado River water) from agricultural fields.

Percolation from agricultural fields has resulted in local salinities higher than Colorado River water because of the leaching of salts from these fields. In other areas, mounds of good quality fresh water have resulted from seepage from irrigation canals. This has occurred significantly in the unlined major canals and the All-American, East Highline, and Coachella canals.

Waters within the shallow aquifers of the Salton Trough generally move at right angles to contours lines, and towards the Salton Sea. Based on pumping data and water studies on various wells, groundwater is from six to eight feet below the ground surface level throughout most of the Imperial Valley.

The deep water reservoir underlying Imperial Valley has been estimated at 1.1 billion to 3.0 billion acre-feet, with total recoverable water estimated to be about twenty percent of the water in storage.

(Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management (10631(b)(1)).

There is no groundwater management plan for the City.

(Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater (10631(b)(2)).

The City does not use groundwater.

For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board (10631(b)(2)).

The City does not use groundwater.

(Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records (10631(b)(3)).

The City does not use groundwater.

(Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records (10631(b)(4)).

The City does not use groundwater.

Transfer or Opportunities

Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis (10631(d))

The City does not have plans to exchange or transfer water. All agencies within the Imperial Valley utilize the same raw source water from the Imperial Irrigation District. However, if connected to another water system there would be the benefit of an emergency water supply. The City will evaluate the potential for long term possibilities.

Table 20 Transfer and exchange opportunities			
Transfer agency	**Transfer or exchange**	**Short term or long term**	**Proposed Volume**
None	0	0	0
Total	**0**	0	0
Units (circle one): acre-feet per year			

Figure 52 - TABLE 20 Transfer and exchange opportunities

Development of Desalinated Water

Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply (10631(i)).

There are no plans to use and treat the brackish groundwater as a long-term supply in the Imperial Valley.

There are no plans for the City of Calexico to use and treat the brackish groundwater as a long-term supply in the Imperial Valley. There are no feasible opportunities for the City of Calexico to independently development of desalinated water sources within the planning horizon of the 2010 UWMP, because of the supply availability and cost effectiveness of treating surface water from the Colorado River. If it becomes financially feasible in the future, there may be consideration for desalination of brackish groundwater and drain water on a regional basis.

Recycled Water Opportunities

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

Recycled Water Feasibility

The City of Calexico provides sewer service and has a wastewater treatment plant which produces secondary (includes de-nitrification) treatment level wastewater. Treated waste water is discharged to percolation ponds. The cost of the City's water supply is $177 per acre foot ($68 per acre foot for supply and $109 per acre foot for treatment). The cost of a recycled water treatment and distribution system would

exceed $500 per acre foot. Although it is not currently financially feasible for the City to provide the facilities for recycling wastewater, it may be financially feasible for new industry and geothermal and solar energy plants if part of a regional program and strategy to require use of such water as an alternative to using Colorado River Supplies, or if development of recycled water is subsidized with other state or federal funding.

The existing treated wastewater does not meet Title 22 Standards, and no wastewater is recycled within the City's service boundary. The WWTP discharges the treated waste water to IID drainage canals, where it eventually enters the Salton Sea.

There are no other wastewater treatment, discharge or recycle facilities or agencies within the City's service area.

There are potential uses for recycled water that include but is limited to: landscape irrigation, industrial reuse, wetlands, some agricultural uses (consistent with State regulations) and wildlife habitat enhancement. There are some recycled water projects that have been proposed in the Imperial Valley for use in Solar and Geothermal plants.

(Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal (10633(a)).

Wastewater Collection and Treatment in Calexico

The City Waste Water Treatment Plant (WWTP) manages wastewater collection and treatment for the City. All of the wastewater flows from the City (including storm water run-off), and is collected and treated at the WWTP. The WWTP treats an average of 2.5 million gallons per day (mgd).

Wastewater Treatment					
Treatment Plant Name	**Location (City)**	**Average Daily (2010)**	**Maximum Daily (2010)**	**Year of Planned Build-out**	**Planned Maximum Daily Volume**
WWTP	Calexico	2.5 MGD	3.8 MGD	2020	4.3 MGD

The City owns and operates a municipal wastewater treatment facility. The treatment

system consists of preliminary, primary, and secondary treatment before being disinfected and discharged. Wastewater is discharged o the New River, a water of the United States, and a tributary to the Salton Sea.

Treatment Process Description

The Facility provides secondary treatment through two treatment trains; one is an activated sludge treatment system with a design capacity of 2.5 MGD, and the second is an aerated lagoon treatment system with a design capacity of 1.8 MGD. The overall design capacity for the treatment plant is 4.3 MGD. Wastewater is passed through preliminary, primary, and secondary treatment systems before being disinfected and discharged to the New River. Influent flow is split at the diversion structure to the individual treatment trains. All influent flow passes through the preliminary treatment systems, which consist of a mechanical bar screen, manual bypass bar screen, and aerated grit chamber. Further, all influent flow is directed to the two primary clarifiers which are operated in parallel. Wastewater is then stabilized in either the activated sludge treatment system or the aerated lagoon treatment system. The activated sludge treatment system consists of three aeration basins which are operated in parallel. Wastewater is then directed through three secondary clarifiers operated in parallel. The second treatment system, the aerated lagoon treatment system, consists of four lagoons operated in series. Following treatment in the individual treatment systems, wastewater is combined and disinfected by an ultraviolet (UV) disinfection system before being discharged to the New River. Primary sludge generated from the primary clarifiers is pumped to two anaerobic digesters for stabilization. Secondary sludge generated from the two of the three secondary clarifiers is also pumped to the anaerobic digesters for stabilization. Stabilized primary and secondary sludge is discharged from the two anaerobic digesters to fourteen sludge drying beds. Digested sludge is dried in the sludge drying beds prior to removal and eventual land application in Dateland, Arizona.

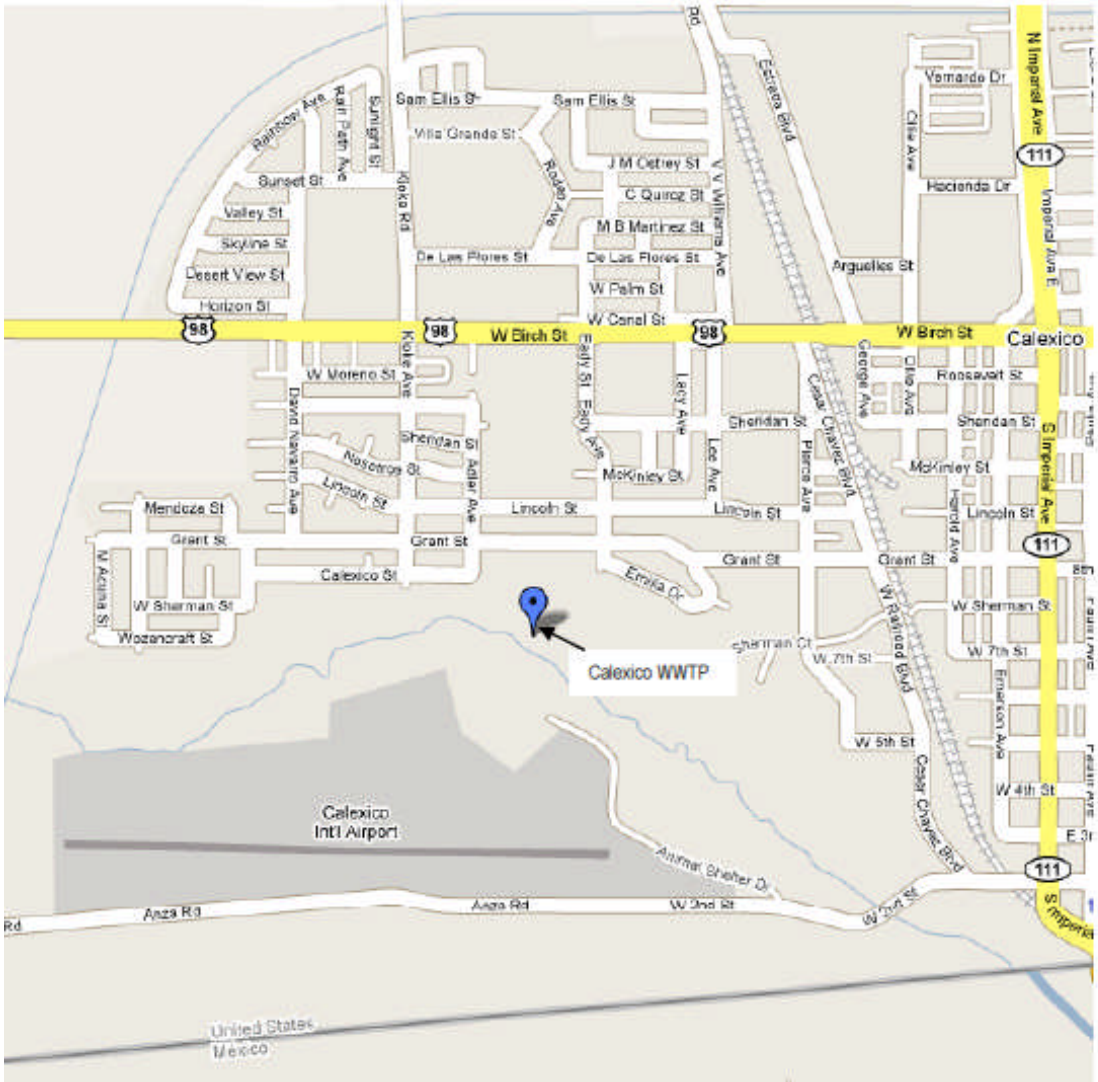

Figure 53 - WWTP Location

(Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project (10633(b)).

Table 21 Recycled water — wastewater collection and treatment						
Type of Wastewater	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Wastewater collected & treated in service area	932	980	1,095	1,125	1,212	1,321
Volume that meets recycled water standard	0	0	0	0	0	0
Units (circle one): million gallons per year						

Figure 54 - TABLE 21 Recycled water - wastewater collection and treatment

(Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use (10633(c)).

Table 22 Recycled water — non-recycled wastewater disposal						
Method of disposal	**Treatment Level**	**2010**	**2015**	**2020**	**2025**	**2030**
No method currently used	None	0	0	0	0	0
	Total	0	0	0	0	0
Units (circle one): acre-feet per year						

Figure 55 – TABLE 22 Recycled water – non-recycled wastewater disposal

There is no current recycled water use in Calexico.

(Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses (10633(d)).

Table 23 Recycled water — potential future use						
User type	**Description**	**Feasibility[1]**	**2015**	**2020**	**2025**	**2030**
Agricultural irrigation		Low	0	0	0	0
Landscape irrigation[2]		Low	0	0	0	0
Commercial irrigation[3]		Low	0	0	0	0
Golf course irrigation		Potential	0	0	0	0
Wildlife habitat		Low	0	0	0	0
Wetlands		Low	0	0	0	0
Industrial reuse		Possible	0	0	0	0
Groundwater recharge		Low	0	0	0	0
Seawater barrier		None	0	0	0	0
Geothermal/Energy		Possible	0	0	0	0
Indirect potable reuse		None	0	0	0	0
Other (user type)						
	Total	0	0	0	0	0

Units (circle one): million gallons per year

[1]Technical and economic feasibility.

[2]Includes parks, schools, cemeteries, churches, residential, or other public facilities)

[3]Includes commercial building use such as landscaping, toilets, HVAC, etc) and commercial uses (car washes, laundries, nurseries, etc)

Figure 56 - TABLE 23 Recycled water - potential future use

Since the QSA has been approved, recycled water may become more of a feasible option for new industry within the Imperial Valley. There is not enough water for IID to allocate to proposed renewable energy projects without developing new sources and/or policies. Although it is not currently financially feasible for the City to provide the facilities for recycling wastewater, it may be for new industry and geothermal and solar energy plants.

“IID Interim Water Supply Policy for Non-Agricultural Projects” dated 09/29/2009 (IWSP) currently designates up to 25,000 AFY of water to Non-Agricultural Projects within IID’s water service area.

The City does not currently have the resources for administration, design and construction of the required facilities at the wastewater plant to treat the water to Title 22 reuse standards and distribute the water. However if the required facilities are funded by private industry and an agreement can be made with said industry over the lifespan of the facilities it may be feasible.

(Describe) the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision (10633(e)).

There are currently no planned recycled water projects or recycled water use in the City for the next 20 years. It is technically feasible to treat the City's wastewater to Title 22 standards and distribute for recycled use. There are a number of uses that the recycled water can be used for locally, including golf courses, agriculture, irrigation, and industrial use. It is not, however, currently economically feasible for the city to construct recycled water facilities. Any potential to upgrade the wastewater facilities to produce recycled water depends completely upon grant funding or private financing and approved agreements between the City and developer(s). The Integrated Regional Water Management Plan (IRWMP) that is currently being developed will evaluate regional recycling opportunities and potential grant funding for projects consistent with the Imperial regional goal and objectives, and the State's preferences and priorities.

Table 24
Recycled water — 2005 UWMP use projection compared to 2010 actual

Use type	2010 actual use	2005 Projection for 2010[1]
Agricultural irrigation	0	0
Landscape irrigation[2]	0	0
Commercial irrigation[3]	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
Other (user type)	0	0
Other (user type)		
Total	0	0

Units (circle one): million gallons per year
[1]From the 2005 UWMP.
[2]Includes parks, schools, cemeteries, churches, residential, or other public facilities)
[3]Includes commercial building use such as landscaping, toilets, HVAC, etc) and commercial uses (car washes, laundries, nurseries, etc)

Figure 57 - TABLE 24 Recycled Water - 2005 UWMP use projection compared to 2010 actual

(Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year (10633(f)).

Table 25 Methods to encourage recycled water use					
	Projected Results				
Actions	**2010**	**2015**	**2020**	**2025**	**2030**
Financial incentives					
None	0	0	0	0	0
Total	0	0	0	0	0
Units (circle one): acre-feet per year					

Figure 58 - TABLE 25 Methods to encourage recycled water use

There are no financial incentives because the city does not have the facilities to provide recycled water.

The city is open to discussions with future developers and industry regarding upgrading the wastewater treatment plant for recycled use; provided the cost of such improvements are covered by the developer and/or industry and a contract for services can be agreed upon by all involved parties for the life of the facility.

(Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use (10633(g)).

A recycled water master plan has not been prepared for the City to date. Recycled water is not financially feasible at this time unless funded completely by a developer or industry. There are no current plans for installation of dual distribution systems, promotion of recirculating uses or to facilitate the increased use of treated wastewater that meets recycled water standard because it is not financially feasible at this time. The main obstacle for recycled water use is financial; upgrading the wastewater treatment facility and installing a dual distribution system is beyond the City's current resources.

The city will work with future (high water demand) developers and industry to promote the potential of funding the wastewater treatment plant upgrades and new purple pipe distribution systems.

Future Water Projects

(Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program (10631(h)).

Table 26
Future water supply projects

Project name[1]	Projected start date	Projected completion date	Potential project constraints[2]	Normal-year supply[3]	Single-dry year supply[3]	Multiple-dry year first year supply[3]	Multiple-dry year second year supply[3]	Multiple-dry year third year supply[3]
No planned projects	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	0	0	0	0	0	0

Units (circle one): million gallons per year

[1]Water volumes presented here should be accounted for in Table 16.

[2]Indicate whether project is likely to happen and what constraints, if any, exist for project implementation.

[3]Provide estimated supply benefits, if available.

Figure 59 - TABLE 26 Future water supply projects

Although the City does not have any future water supply projects planned to increase the amount of the water supply available, the City if Imperial is a participant in the Imperial Water Forum. The Imperial IRWMP being developed by the Water Forum includes evaluation of potential future projects and programs that may be implemented to increase the amount of the water supply available in all types of years. The Imperial IRWMP will contain an implementation plan and listing of projects to be implemented to increase the water supply portfolio. As a participant in the IRWMP, the City is working within the larger Region through the collaborative IRWM effort to increase the amount of supply within the Region.

Section 5 – Water Supply Reliability and Water Shortage Contingency Planning

Water Supply Reliability

An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions (10620(f)).

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable (10631(c)(2)).

The main factors that can cause water supply shortages for the City are water pollution, earthquakes and long term energy outages at the treatment and pumping facilities.

The Imperial Irrigation District is the only supplier of water to the City, and there is no alternative source water. The water quality of the agricultural drains, New River and Alamo River are high in total dissolved solids and other contaminants and are as such unusable as a potable or irrigation water source.

The City receives water from the All-American and Central Main Canals. If either the All-American Canal or Central Main Canal were shut down, water could not be delivered to the treatment plant. The shut down could be for scheduled maintenance or as a result of an emergency, such as an earthquake. In October 1979, an earthquake caused levee and slope failures along the All-American Canal east of El Centro, severely limiting water flow. This is the only time during the last 25 years that the All-American Canal was shut down.

Maintenance is scheduled to be performed monthly on the South Date Canal and Dahlia Lateral. Typically, however, the South Date Canal and the Dahlia Lateral are shut down about three times annually, usually lasting approximately three days each time. The Central Main Canal and the All-American Canal are seldom shut down. To perform maintenance on the Central Main Canal, the water level is lowered but service is not completely interrupted. According to plant operators, this is done every five to ten years.

In the event that there is a water shortage in the Lower Colorado River Basin, the

Imperial Irrigation District/San Diego County Water Authority water transfer agreement states that both agencies will share, on a pro-rata basis, any reductions in water to Imperial Irrigation District should a shortage declaration by the Secretary of the Interior for the Lower Colorado River Basin affect the Imperial Irrigation District's water conservation and transfer programs. When the amount of water in usable storage in Lake Mead is less than 15 million acre-feet and the unregulated inflow into Lake Powell is forecasted to be less than 8.8 million acre-feet, the Imperial Irrigation District and the San Diego County Water Authority have agreed to meet and confer to discuss a supplemental water transfer agreement in anticipation of the shortage.

Should operating conditions on the Colorado River indicate Imperial Irrigation District may be impacted by reductions in water deliveries, the Imperial Irrigation District will notify all of its water users by mail and will conduct an educational outreach program in conjunction with the local media and municipal water systems. The notice will request all water suppliers, and in particular residential, industrial, and commercial water users, to conserve water on a voluntary basis. Urban water suppliers will be responsible for notifying their customers and implementing their own voluntary water conservation measures and programs.

Urban water supply reductions in the Imperial Unit are not likely to occur during the next twenty years. Urban water supply shortage stage one is voluntary, has cut back conditions of less than 15 percent, and is estimated to provide up to 79 percent of the reduction goal for urban water suppliers. Urban water supply shortage stage two is voluntary, has cut back conditions of 15 percent to less than 25 percent, and is estimated to provide 7 to 12 percent of the reduction goal for urban water suppliers. Urban water supply shortage stage 3 is mandatory, has cut back conditions of 25 percent to less than 35 percent, and is estimated to provide the remainder of any reduction goals for urban water suppliers.

Table 29 Factors resulting in inconsistency of supply							
Water supply sources[1]	**Specific source name, if any**	**Limitation quantification**	**Legal**	**Environmental**	**Water quality**	**Climatic**	**Additional information**
Imperial Irrigation District	None	None	None	None	None	None	None
Units (circle one): million gallons per year *[1]From Table 16.*							

Figure 60 - TABLE 29 Factors resulting in inconsistency of supply

There are no known upcoming factors that will result in inconsistency of supply.

Imperial Irrigation District Supply

It is unlikely that the urban water supply of Imperial Irrigation District would ever be affected, even under shortage or drought conditions on the Colorado River. Urban water use in the Imperial Unit makes up less than three percent of the total water delivered by the Imperial Irrigation District. Under a worst case water supply scenario, the Imperial Irrigation District could meet the demands of urban water users. Due to the high priority of the Imperial Irrigation District's water rights, Colorado River flows, and the storage facilities on the Colorado River it is highly unlikely that Imperial Irrigation District's water supply will be affected, even in dry years.

Water Shortage Contingency Planning

Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster (10632(c)).

Upon a catastrophic water supply reduction, mandatory provisions to reduce individual urban consumer water use will be placed into effect. During a shortage the City would increase media attention to the water supply situation and would step up public water education programs, encourage property owners to apply for landscape and interior water use surveys and continue to advertise the importance of customers installing efficient plumbing fixtures.

During declared shortages, or when a shortage declaration appears imminent, the City Manager activates a City water shortage response team. The team includes: water, fire, planning, health, emergency services, public affairs, parks and recreation, and the Mayor's Office. During a declared water shortage, the City will accept applications for new building permits but will not issue permits until the shortage declaration is rescinded. An appeal process is available and ends at the City Council.

In the event of extended regional power outages, the City will use standby diesel generators that will power critical functions at the water treatment plant. The fuel would be brought in every two days. In this way the residents of Calexico would not lose supply of potable water.

In the event of an earthquake that damages critical components of the water treatment plant, the City will divert irrigation water into the potable water distribution system. Under this scenario non-potable water would be delivered to City customers and the water would have to be boiled by each customer prior to potable water use. The water could be delivered by diesel powered pumps to the City's distribution system. If the All-American or Central Main Canal is damaged and unable to transmit water, the City will declare a water shortage emergency and will implement the appropriate conservation measures. The City will have approximately ten days of raw water storage to rely on from the time of the emergency with these conservation measures in place.

Imperial Irrigation District Emergency Preparedness Plan

During or immediately after any water supply emergency, IID staff implements the Emergency Preparedness Plan. The Emergency Preparedness Plan includes required actions and procedures by IID staff to respond to events that impair water operation of canals, laterals, drains, dams, and other facilities. These responses are not normal operation and maintenance activities. Generally, any occurrence that requires an immediate response is classified as an extreme event or emergency.

The Emergency Preparedness Plan defines the role each responsible employee will play during an emergency. Water Department staff conducts emergency and/or disaster response planning in the Water Control Center. Coordination of staffs with other departments will take place in the General Manager's conference room. All-

American Canal River Division staff planning will be centered in the Imperial Dam Control House. Other staffs meet and coordinate actions at designated areas.

Established actions and procedures exist for extreme events and emergencies that endanger operation of the water system. Possible emergencies/extreme events that endanger operation of the water system could include: earthquakes, storms, rain, run-off from desert washes, flooding, facility or structure damage, power outages, fire, vehicles in canals, equipment theft/vandalism, or other disaster. The Imperial Irrigation District's water delivery and drainage systems do not totally shut down during an emergency.

The Imperial Irrigation District has conducted Emergency Preparedness Exercises in the past. Emergency preparedness exercises will be updated with the development of new emergency preparedness exercises. Water Department staffs trained and participated with the U. S. Department of the Interior Bureau of Reclamation's Tabletop Exercise for emergency preparedness.

The cities in the Imperial Unit have a ten-day storage holding capacity requirement. The Imperial County Office of Emergency Services requires this storage holding capacity for cities (Imperial Irrigation District, 1998, p.22).

IID is considered a special district in the eyes of the state and the federal government. A special district has to meet the same requirements as a local city pertaining to emergency preparedness and emergency management. As such, IID is required to go through the appropriate channels regarding mutual aid.

In the event of a natural and or man-made disaster, IID would open its Emergency Operations Center located at headquarters in Imperial, California. IID would then notify the Operational Area, which is the Imperial County Office of Emergency Services located in Heber at the Imperial County Fire Department Station # 2. If the event called for mutual aid IID, the EOC would request assistance from the OA. If the OA was unable to fulfill this request it would go to the next highest level, which would be the Regional Emergency Operations Center, located in Los Alamitos.

In the event the REOC was unable to fill the request it would go to the State Operations Center located in Sacramento. The SOC would fill the request or ask for federal assistance from the Federal Emergency Management Agency a subsection of the Federal Department of Homeland Security.

Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning (10632(d)).

The City has adopted the resolution found in Appendix C, Restrictions During a Declared Water-Shortage Emergency. The following restrictions shall be effective during a declared Water-Shortage Emergency:

1. There shall be no water used for irrigation or landscaping purposes.
2. There shall be no private or commercial car washing.
3. No restaurant, hotel, cafe, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any customer unless requested.
4. Use of potable water for construction, compaction, dust control, street or parking lot sweeping, building wash down shall be prohibited.
5. Use of potable water for sewer system maintenance or fire protection training shall be prohibited without prior approval by the Mayor;
6. Use of potable water for any purpose in excess of the amount allocated shall be prohibited.
7. Other restrictions and prohibitions may become necessary during a declared Water Shortage Emergency, to safeguard the adequacy of the water supply for domestic, sanitation, fire protection, and environmental requirements.

Table 36
Water shortage contingency — mandatory prohibitions

Prohibitions	Stage When Prohibition Becomes Mandatory
Using potable water for street washing	III
Serving drinking water unless requested	I
Use of potable water for construction, compaction, dust control and building wash down	II
Use of potable water for sewer system maintenance or fire protection training	III
Use of potable water in excess of amount allocated	IV
Other as necessary	IV

Figure 61 - TABLE 36 Water shortage contingency - mandatory prohibitions

Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply (10632(e)).

Water Shortage Stages and Triggering Mechanisms

As the water purveyor, the City of Calexico must provide the minimum health and safety water needs of the community at all times. The water shortage response is designed to provide a minimum of 50% of normal supply during a severe or extended water shortage. The rationing program triggering levels shown below were established to ensure that this goal is met.

Rationing stages may be triggered by groundwater contamination, power failure, earthquake or other natural disaster.

The City's only potable water source is the Colorado River. Specific criteria for triggering the City's rationing stages are shown in Figure 63.

Water Shortage Stages and Triggering Mechanisms				
Percent Reduction of Supply	**Stage I Up to 15%**	**Stage II 15 - 25%**	**Stage III 25 - 35%**	**Stage IV 35 - 50% >**
Water Supply Condition				
Supply	Projected supply insufficient to provide 80% of normal demand, Or	Projected supply insufficient to provide 75% of normal demand, Or	Projected supply insufficient to provide 65% of normal demand, Or	Projected supply insufficient to provide 50% of normal demand, Or
Water Quality	Contamination of 10% of water supply (exceeds primary drinking water standards)	Contamination of 20% of water supply (exceeds primary drinking water standards)	Contamination of 30% of water supply (exceeds primary drinking water standards)	Contamination of 40% of water supply (exceeds primary drinking water standards)

Figure 62 – Water shortage stages and triggering mechanisms

Water Allotment Methods

The City has established the following allocation method for each customer type. See the city ordinance for sample water shortage rationing allocation method.

Single Family Hybrid of Per-capita and Percentage Reduction

Multifamily Hybrid of Per-capita and Percentage Reduction

CommercialPercentage Reduction
Industrial Percentage Reduction
Gov't/Institutional Percentage Reduction
Recreational Percentage Reduction - vary by efficiency

Water Shortage Rationing Allocation Method

Single-family account allocations may be determined as follows: assuming 4 persons or less per home, an account would receive 11 HCF per month (68 gpcd) plus 55% of their historic use, not to exceed an upper limit. The upper limit on additional water may be 30 HCF per year (i.e., 132 HCF + 50% historic ≤ 162 HCF a year). Appeals would be available for additional people. For each additional person at a home the allotment is increased by 4 HCF per billing period (49 gcd).

Multi-residential account allocations may be determined as follows: assuming 3 persons or less per unit, accounts receive 6 HCF per unit per month (49 gcd), plus 40% of their historic use, not to exceed an upper limit. The upper limit on additional water may be 10 HCF per year per unit (i.e., 72 HCF + 40% historic ≤ 82 HCF a year). Appeals would be available for additional people. For each additional person, the allotment increases by 4 HCF per billing period (49 gcd).

Increased allocations for residential accounts would be limited to the following:

Greater number of residents than assumed by plan.
Medical conditions requiring additional water.

Commercial, Industrial and Institutional would receive a percentage reduction from historical use. The historical use period used to determine the baseline amount may vary based on specific factors. Appeals would be available for increased business, census or other factors.

New Customers Per-capita (no allocation for new landscaping during a water shortage.)

Based on current and projected customer demand, the city ordinance shown in Appendix C indicates the water allocated to each customer type by priority and rationing stage during a declared water shortage.

Individual customer allotments are based on a five-year period. This gives the City a more accurate view of the usual water needs of each customer and provides additional flexibility in determining allotments and reviewing appeals. However, no allotment may be greater than the amount used in the most recent year of the five-year base period.

The Water Department Manager shall classify each customer and calculate each customer's allotment according to the Sample Water Rationing Allocation Method. The allotment shall reflect seasonal patterns. Each customer shall be notified of their classification and allotment by mail before the effective date of the Water Shortage Emergency. New customers will be notified at the time the application for service is made. In a disaster, prior notice of allotment may not be possible; notice will be provided by other means. Any customer may appeal the Water Department Manager's classification on the basis of use or the allotment on the basis of incorrect calculation.

Rationing Stages and Reduction Goals

The City has developed a four stage rationing plan to invoke during declared water shortages. The rationing plan includes voluntary and mandatory rationing, depending on the causes, severity, and anticipated duration of the water supply shortage.

Water Rationing Stages and Reduction Goals			
Shortage Condition	**Stage**	**Reduction Goal**	**Type of Rationing Program**
Up to 15%	I	15%	Voluntary
15 – 25%	II	25%	Mandatory
25 - 35%	III	35%	Mandatory
35 - 50%	IV	50% or >	Mandatory

Figure 63 - Water rationing stages and reduction goals

Mandatory Prohibitions on Water Use

The Calexico "No Waste" Ordinance prohibits certain types of water uses during water shortage emergencies. The following are the stages at which water use prohibitions become active:

Table 37 Water shortage contingency — consumption reduction methods		
Consumption Reduction Methods	**Stage When Method Takes Effect**	**Projected Reduction (%)**
Education Program	All Stages	Yes
Demand Reduction Program	All stages	Yes
Voluntary Plumbing Fixture Replacement	All stages	Yes
Use Prohibitions	All stages	Yes
Water Shortage Pricing	All stages	Yes
Voluntary Rationing	I	No
Restrict Building Permits	II, III, IV	No
Mandatory Rationing	II, III, IV	No
Percentage Reduction by Customer Type	II, III, IV	No
Per Capita Allotment by Customer Type	IV	No
Flow Restriction for Wasters	IV	No

Figure 64 - TABLE 37 Water shortage contingency - consumption reduction methods

Priority by Use

Priorities for use of available potable water during shortages were based on input from the City Emergency Response Team, citizen groups, and legal requirements set forth in the California Water Code, Sections 350-358. Water allocations are established for all customers according to the following ranking system:

- Minimum health and safety allocations for interior residential needs (includes single family, multi-family, hospitals and convalescent facilities, retirement and mobile home communities, and student housing, and fire fighting and public safety)
- Commercial, industrial, institutional/governmental operations (where water is used for manufacturing and for minimum health and safety allocations for employees and visitors), to maintain jobs and economic base of the community (not for landscape uses)
- Existing landscaping
- New customers, proposed projects without permits when shortage declared.

Health and Safety Requirements

Based on commonly accepted estimates of interior residential water use in the United States, Figure 66 indicates per capita health and safety water requirements. In Stage I

shortages, customers may adjust either interior or outdoor water use (or both), in order to meet the voluntary water reduction goal.

However, under Stage II, Stage III and Stage IV mandatory rationing programs, the City has established a health and safety allotment of 50 gpcd (which translates to 24 HCF per person per year), because that amount of water is sufficient for essential interior water with no habit or plumbing fixture changes. If customers wish to change water use habits or plumbing fixtures, 50 gpcd is sufficient to provide for limited non-essential (i.e. outdoor) uses.

Stage IV mandatory rationing, which is likely to be declared only as the result of a prolonged water shortage or as a result of a disaster, would require that customers make changes in their interior water use habits (for instance, not flushing toilets unless "necessary" or taking less frequent showers).

Per Capita Health and Safety Water Quantity Calculations						
	Non-Conserving		**Habit Changes** 1		**Conserving Fixtures** 2	
Toilets	4 flushes x 3.5 gpf	14	3 flush x 3.5 gpf	10.5	4 flush x 1.6 gpf	6.4
Shower	5 min x 3.0 gpm	15	4 min x 3.0 gpm	12	5 min x 2.0	10
Washer	12.0 gpcd	12	11.0 gpcd	11	10.0 gpcd	10
Kitchen	4 gpcd	4	4 gpcd	3	4 gpcd	3
other	4 gpcd	4	4 gpcd	4	4 gpcd	4
Gallons per person per day		49		40.5		33.4
CCF per person per year		24		20		16

1 Reduced shower use results from shorter length of shower and reduced flow. Reduced washer use results from fuller loads.
2 Fixtures include ULF 1.6 gpf toilets, 2.0 gpm showerheads, faucet aerators and efficient clothes washers.

Figure 65 - Per Capita Health and Safety water quantity calculations

An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments (10632(g)).

Mechanism to Determine Reductions in Water Use

Under normal water supply conditions, potable water production figures are recorded daily. Totals are reported weekly to the Water Treatment Facility Supervisor. Totals are reported monthly to the Water Department Manager and incorporated into the water supply report.

During a Stage I or Stage II water shortage, daily production figures are reported to the Supervisor. The Supervisor compares the weekly production to the target weekly production to verify that the reduction goal is being met. Weekly reports are forwarded to the Water Department Manager and the Water Shortage Response Team. Monthly reports are sent to the City Council. If reduction goals are not met, the Manager will notify the City Council so that corrective action can be taken.

During a Stage III or Stage IV water shortage, the procedure listed above will be followed, with the addition of a daily production report to the Manager. During emergency shortages, production figures are reported to the Supervisor hourly and to the Manager and the Water Shortage Response Team daily. Daily reports will also be provided to the City Council and the Imperial County Office of Emergency Services.

All surplus revenues that the City collects are currently used to fund the Rate Stabilization Fund, conservation, recycling, and other capital improvements. The City estimated projected ranges of water sales by shortage stage to best understand the impact each level of shortage will have on projected revenues and expenditures by each shortage stage.

Penalties or charges for excessive use, where applicable (10632(f)).

Any customer violating the regulations and restrictions on water use set forth in the “No Waste" Ordinance shall receive a written warning for the first such violation. Upon a second violation, the customer shall receive a written warning and the City may cause a flow-restrictor to be installed in the service. If a flow-restrictor is placed, the violator shall pay the cost of the installation and removal. Any willful violation occurring subsequent to the issuance of the second written warning shall constitute a misdemeanor and may be referred to the Office of the City Attorney for prosecution. If water service is disconnected, it shall be restored only upon payment of the turn-on charge fixed by the City Council.

There shall be rate increases starting with a 25% rate increase at Stage II; 50% at Stage III, and a 100% increase at Stage IV. See Appendix D, *Establishment of Rate Increases During a Water Shortage* for more information.

Table 38 Water shortage contingency — penalties and charges	
Penalties or Charges	**Stage When Penalty Takes Effect**
25% Rate Increase	II
50% Rate Increase	III
100% Rate Increase	IV
Penalty for Excess Use	II
200% Charge for Excess Use	III

Figure 66 - TABLE 38 Water shortage contingency - penalties and charges

A draft water shortage contingency resolution or ordinance (10632(h)).

A draft water shortage contingency resolution follows. This will be adopted at the public hearing for the UWMP.

Draft Resolution to Declare a Water Shortage Emergency

CITY OF CALEXICO
IMPERIAL COUNTY,
CALIFORNIA Date
The City Council of Calexico does hereby resolve as follows:

PURSUANT to California Water Code Section 350 et seq., the Council has conducted duly noticed public hearings to establish the criteria under which a water shortage emergency may be declared.

WHEREAS, the Council finds, determines and declares as follows:

(a) The City is the water purveyor for the property owners and inhabitants of Calexico;
(b) The demand for water service is not expected to lessen.
(c) When the potable water supply available to the City falls at or below the Stage II triggering levels described in the most current Urban Water Management Plan, the City will declare a water shortage emergency. The water supply would not be adequate to meet the ordinary demands and requirements of water consumers and there may be insufficient water for human consumption, sanitation, fire protection, and environmental requirements. This condition is likely to exist until groundwater contamination is remedied and/or water system damage resulting from a disaster is repaired and normal water service is restored.

NOW, THEREFORE, BE IT RESOLVED that the City Council of Calexico hereby directs the Mayor to find, determine, declare and conclude that a water shortage emergency condition exists that threatens the adequacy of water supply, until the City's water supply is deemed adequate and potable. After the declaration of a water shortage emergency, the Mayor is directed to determine the appropriate Rationing Stage and implement the City's Water Shortage Emergency Response.

FURTHERMORE, the Council shall periodically conduct proceedings to determine additional restrictions and regulations which may be necessary to safeguard the adequacy and quality of the water supply for domestic, sanitation, fire protection, and environmental requirements.

Moratorium on New Connections during a Water Shortage

CITY OF CALEXICO
IMPERIAL COUNTY,
CALIFORNIA Date
The City Council of Calexico does hereby resolve as follows:

The Municipal Code of the City of Calexico is hereby amended to read as follows:

XX-5 MORATORIUM ON SERVICE COMMITMENTS AND CONNECTIONS

2. When the City declares a water shortage emergency, the following regulations shall become effective immediately and shall continue in full force and effect to prohibit the following while it remains in full force and effect:

    a. The City shall not issue oral or written commitments to provide new or expanded water service, including will-serve letters.
    b. The City shall not sell meters for water service connections, despite the prior issuance of will-serve letters or other oral or written service commitments, unless building permits have been issued.
    c. The City shall not provide new or expanded water service connections, despite the prior issuance of will-serve letters or other oral or written service commitments and meters, unless building permits have been issued.
    d. The City shall not provide water for use on any new plantings installed after the declaration of a Water Shortage Emergency.
    e. The City shall not annex territory located outside the City's service boundary.

3. The following uses are exempt from the moratorium and upon application to the City shall receive necessary water service commitments and connections to receive water from the City:

    a. Uses, including but not limited to, commercial, industrial, single and multifamily residential, for which a building permit has been issued by the City on or before the declaration of a Water Shortage Emergency.
    b. Uses, including but not limited to, commercial, industrial, single and multifamily residential, for which a retail meter had been purchased from the City before the declaration of a Water Shortage Emergency, as evidenced by a written receipt and for which a building permit has been issued and remains in full force and effect.
    c. Publicly owned and operated facilities, including but not limited to schools, fire stations, police stations, and hospitals and other facilities as necessary to protect the public health, safety and welfare.

Water Quality

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

The Safe Drinking Water Act ("SDWA") was amended on August 6, 1998 to include "systems providing water for human consumption that deliver water by constructed conveyances such as irrigation canals." On October 27, 1998 the IID signed a Compliance Agreement with the California Department of Public Health ("CDPH") requiring that all domestic users with service pipes to the IID's canal system must receive an alternate supply of water for drinking and cooking. The alternate supply must be of sufficient quality to achieve an equivalent level of public health protection as provided by the SDWA. On May 19, 2000, CDPH provided written notice that the IID had met the requirements of the Compliance Agreement and that the IID faced no further enforcement actions. The IID continues to meet the conditions of the Compliance Agreement.

To comply with US Environmental Protection Agency (EPA) requirements and avoid termination of canal water service, residents in the IID service area who do not receive treated water service must obtain alternative water service for drinking and cooking from a state-approved provider. To avoid penalties that could exceed $25,000 a day, IID strictly enforces this rule. The section tracks nearly 4,000 raw water service accounts required by the California Department of Public Health (CDPH) to have alternate drinking water service. The section maintains a small-acreage pipe and drinking water database, and provides an annual compliance update to CDPH.

Table 30
Water quality — current and projected water supply impacts

Water source	Description of condition	2010	2015	2020	2025	2030
Imperial Irrigation District Raw Water Supply	Water Pollution	0	0	0	0	0
Units (circle one): million gallons per year						

Figure 67 - TABLE 30 Water quality - current and projected water supply impacts

It is not anticipated that there will be any major raw water quality disruptions. The following describe the water quality concerns that were discussed in the recent

Sanitary Survey completed in 2010:

Source Water General Minerals

The bicarbonate alkalinity of the Colorado River raw water ranges from 160 to 200 mg/L. The hardness ranged from 190 to 240 mg/L. TDS ranged from 720 mg/L to 840 mg/L. The following summarizes the monitoring results for alkalinity, hardness and total dissolved solids (TDS) for samples collected from the IID system since 2003.

Sample Location	Date	TDS (mg/L)	Bicarbonate Alkalinity (mg/L)	Hardness as CaCO3 (mg/L)
Drop 1	10/15/04	770	190	350
Drop 1	10/14/05	800	190	360
Drop 1	10/27/06	830	200	380
Drop 1	10/26/07	820	200	350
Drop 1	10/24/08	820	190	360
East High Line	10/15/04	770	190	350
East High Line	10/14/05	800	190	360
East High Line	10/27/06	830	200	350
East High Line	10/26/07	860	240	370
East High Line	10/24/08	850	190	360
Central Main	10/15/04	790	190	350
Central Main	10/14/05	790	190	360
Central Main	10/27/06	780	190	350
Central Main	10/26/07	840	200	370
Central Main	10/24/08	720	190	370
Westside Main	10/15/04	820	190	350
Westside Main	10/14/05	810	190	360
Westside Main	10/27/06	790	190	370
Westside Main	10/26/07	800	200	360
Westside Main	10/24/08	820	190	360

Figure 68 - Raw Colorado River Water General Tested Mineral Quality (In IID Delivery System)

Water Pollution

The City participated in the Sanitary Survey Update 2010. The sanitary survey update provides the most recent information on the potential contaminant sources of the raw water supply. The main concern identified in the Sanitary Survey is the variable Microbial Character of the raw water.

The source water was tested as required by Title 22 California code by the IID. The Results of the bacteria testing showed wide fluctuations in the total coliform, fecal coliform and E.coli. While some results can be attributed to a passing slug of contaminated water or the testing method, it appears that there is some correlation between the season and high concentrations of bacteria. See Figure 71 for a graph of the variable total coliforms.

The variable microbial character of the raw water is due in part to:

a. Storm Water Runoff and First Flush Events;
b. Imperial Irrigation District routine inspection and maintenance procedures;
c. Spills into the IID canal system;
d. Drowning deaths in the IID canal system and associated response plans;
e. Failing Septic Systems along the Colorado River;
f. Recreational Activity;
g. Agricultural activity.

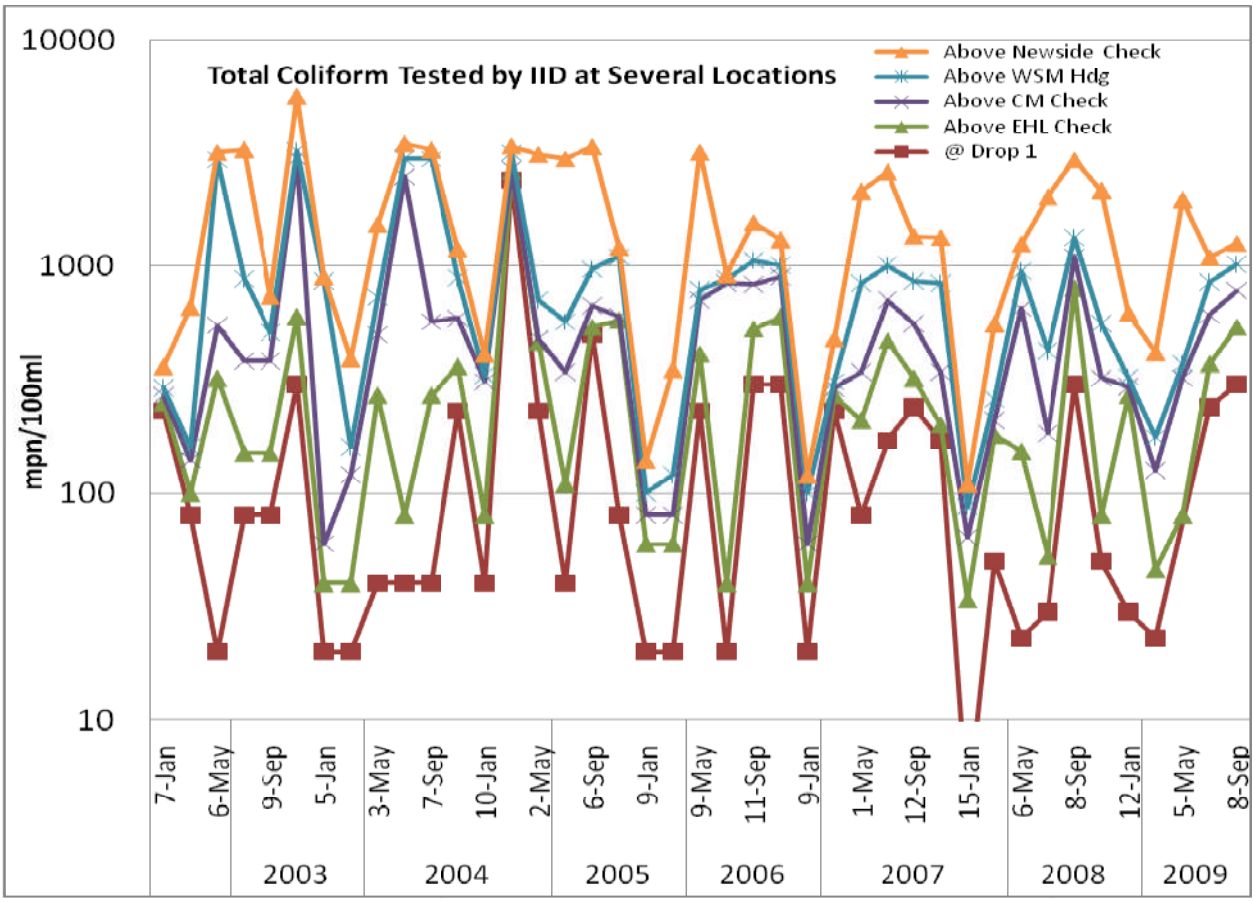

Figure 69 - Total Coliform Variations in the IID Canal Delivery System

According to the Sanitary Survey Update 2010, it appears that there is some correlation of high total coliform between the various locations. It also appears that the longer the water is in the IID canal system, the higher the Total Coliform counts. It appears that there is an additional coliform source or that the conditions support bacteria growth within the IID canal system.

Temperature is widely recognized as an important controlling factor in influencing bacterial growth. In climates where water temperatures are warm such as the Imperial Valley, bacterial growth may be very rapid. Most bacteria thrive at temperatures at or around that of the human body 98.6°F (37°C), and some, such as Escherichia coli (E. coli), are normal parts of the human intestinal flora. These organisms are mesophiles (moderate-temperature-loving), with an optimum growth temperature between 77°F (25°C) and 104°F (40°C).

The Sanitary Survey included recommendations for the City to reduce the impact of possible contaminants for the next five years. The City plans to implement the recommendations in the survey.

Drought Planning

Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) an average water year, (B) a single dry water year, (C) multiple dry water years (10631(c)(1)).

Under the *Law of the River*, IID retains a legal right to annual net consumptive use of 3.1 MAF from the Colorado River. Under the terms of various agreements and laws, the annual Colorado River flows would have to be reduced to less than 5.0 MAF (one-third of historic average) before the water supply to IID would be impacted. Nevertheless, in the face of a large-scale water supply disruption in the western states, IID is potentially subject to some water supply reduction.

Even in drought years with Lower Colorado River flows less than 7.5 MAF, the existing laws and agreements provide security that the IID should receive its Present Perfected Rights of 2.6 MAF and its overall water allocation remains at 3.1 MAF. This protection is based on the following:

- 1885 California water right, based on reasonable and beneficial use of approximately 7 MAF, conveyed to IID on June 22, 1916.

- 1922 Colorado River Compact requires the Upper Basin states to ensure the supply of 7.5 MAF at Lees Ferry for use by the Lower Basin states (actually stated as 75 MAF over 10 years). Thus, it is the responsibility of the Upper Basin states to provide the full Lower Basin allocation; even in drought years and even if the 10-year running average annual water supply of the river is less than 15.0 MAF.

- 1931 Seven-Party Agreement provides a schedule of apportionments and priorities, which the parties requested "The Division of Water Resource to, in all respects, recognize… and recommend to the Secretary of the Interior… for insertion in any and all contracts for water made by him pursuant to the terms of the Boulder Canyon Project Act…Pursuant to the provisions . . . California was apportioned 4.4 million AF per year out of the lower basin allocation of 7.5 million AF per year, plus 50% of any available surplus water."

- 1931 IID agreed to limit its California pre-1914 appropriate water rights in quantity and priority to the apportionments and priorities contained in the Seven-Party Agreement.

- 1968 Colorado River Basin Project Act states that all deliveries to the Central Arizona Project (CAP) and all other post-1968 water deliveries are subordinate to pre-existing Colorado River water rights in the Lower Basin, regardless of each state's allocations under the 1928 Boulder Canyon Project Act. Therefore, all post-1968 rights in the Lower Basin, including the CAP's, are effectively junior in priority to California's Colorado River diversions under its 4.4 MAF rights. Post-1968 rights in the Lower Basin are estimated to be 1.8 MAF.

- 1979 Supplemental Decree in Arizona v. California retains IID's present perfected rights to use of the Colorado River water. If water supply shortages occur along the Colorado River, IID's present perfected rights must be satisfied prior to the satisfaction of any nonperfected rights, regardless of state lines and Federal agreements. IID has a present perfected right to 2.6 MAF.

- 2003 QSA/Transfer Agreements slightly modify the guaranteed senior water right of IID within California under the terms of the Seven Party Agreement (senior to CVWD, MWD and San Diego city and county), as follows: IID retains its priority 3(a) right to 3.1 MAF of net consumptive use (including transfers out of the IID service area) at Imperial Dam; however, if IID does

not use its full annual apportionment, then MWD can import the balance up to California's 4.4 MAF per year allocation.

- 2007 USBR interim guidelines provide that shortages in Lake Mead storage, and decreasing water levels in the reservoir, will prompt reductions in the deliveries to Arizona and Nevada, but that California deliveries will remain at 4.4 MAF. If California deliveries remain to be 4.4 MAF, then IID deliveries should likewise remain at the agreed right of 3.1 MAF net consumptive use under the terms of the QSA/Transfer Agreements.

Because IID's 2000 Regional UWMP was deemed obsolete and is no longer supported by IID due to the consumptive use limits agreed upon in the QSA, the water supplies available during a normal year are best represented by the post-QSA era (2003 and later). This represents the maximum amount of supply available and is thus the new normal water year. This is the age of limits for IID, where water is not necessarily tightly constrained or scarce, but rather the supply is no longer unlimited due to the agreements with other QSA participants.

Distribution and Priority of Deliveries within IID

See http://www.iid.com/Water/EquitableDistribution for more information.

For the single dry and multiple dry water years assessment, IID's Equitable Distribution Plan (EDP) governs. The EDP was adopted in 2007, along with subsequent regulations, allowing the IID Board to make an annual determination as to Supply/Demand Imbalance (SDI) conditions. On October 26, 2008, IID staff summarized the situation in a board presentation, by noting that a 64% probability existed of demand exceeding supply in the 2009 calendar year, even assuming no overrun were to occur in 2008. Similarly, the Hanemann Brookes Study opined that SDI situations were likely to occur "4 or 5 times out of the next 10 years", and from 2003 through 2008 IID was accounted as overrunning its annual water limit three times. The Equitable Distribution Plan and the Supply/Demand Imbalance are discussed in Item 4 under the single dry and multiple dry year projections.

Future apportionment of municipal, industrial, geothermal, feedlots/dairies, and environmental resources was prescribed in the EDP. The EDP prescribes the amount of water that IID water users receive during periods of supply/demand imbalance (SDI).

The Interim Water Supply Policy, approved on 09/29/09, describes the amount of water available for Non-Agricultural projects and describes the required fees.

Under SDI conditions, industrial and geothermal water users are placed into two categories: (1) For users with existing contracts (as of 2008), water allocated is based on past use, not-to-exceed contracted amount and contract terms; and (2) for contracts after 2008, water allocation is based on anticipated use. The contract terms include not-to-exceed amounts, and considerations for water availability. Future water allocation for dairies and feed lots is based on historical practices. Environmental resources use is based on the amount of mitigation area that has been developed.

IID has established an Equitable Distribution Plan and implementing regulations, together referred to as the Equitable Distribution Program, that are designed to provide for the distribution of water in any year when expected demand for water is likely to exceed expected supply. Under the Equitable Distribution Program, when a supply/demand imbalance is declared, IID apportions the estimated supply among the various types of water users as follows:

a) Municipal and Commercial Users – Municipal and Commercial water users will receive the first allocation, the base amount of 2006 usage plus current District wide average use per capita multiplied by the increase in population since 2006.
b) Industrial Users – For existing contracts, estimated based on past use, not to exceed contracted amount and contract terms. For new contracts, estimated based on anticipated use, not to exceed contract amount and contract terms, taking into consideration the Interim Water Supply Policy dated 09/29/09.
c) Feedlots and Dairies – Estimated based upon past use and consideration of future changes;
d) Environmental Resources Water – Estimated based upon the amount reasonably necessary to achieve the purposes of the District's commitments, taking past use into account; and
e) Agricultural Lands – Straight Line Apportionment. Subtract the estimated demand for categories a through d above from Available Water Supply, and then divide the remaining supply by the total number of Eligible Agricultural Acres. The amount of water apportioned to acreage that does not comply with Eligible Agricultural Acres will be placed in the District Water Exchange.

As part of the Equitable Distribution Plan, a District Water Exchange is established so

that agricultural water users can sell and buy water. This provides flexibility for some agricultural water users to obtain water in addition to their straight line apportionment.

Consumptive use is not the same as delivery. Exhibit B of the Colorado River Water Delivery Agreement dated October 2003 (CRWDA), particularly column 13, summarizes the “IID Net Consumptive Use Amount”, which is indicative of future supplies as measured at Imperial Dam. Agricultural water demands will decrease in an amount equivalent to the water conservation attributable to on-farm efficiency measures (setting aside outside factors such as annual rainfall, differences attributable to the intensity of farming within IID such as acreage in production, double cropping, and market conditions, etc.) and IID system conservation and efficiency measures, so while IID’s total volume in this column is declining, so too are its agricultural demands. However, as a consequence of reducing the agricultural water demand through increased on-farm and system efficiency, less water is available for years when agricultural demand may be higher than normal, such as in years of low rainfall or due to cropping choices made by Imperial Valley growers. Such intermittent spikes in higher agricultural demand means less water is available for non-agricultural development.

Similarly, reductions attributable to system conservation efforts and the All-American Canal Lining Project are a result of the implementation of conservation measures, so there is no net decline in the water available for IID’s water users as a result of water conservation and transfer projects.

The variability in IID’s historical net consumptive use, which can be seen in Figure 73, is representative of the historic variability in agricultural deliveries, since IID’s MCI deliveries are relatively small and fairly consistent. Historic variations in agricultural water demand actually exceed, but are similar in magnitude, to the 408,000 AF per year of transfers called for in the QSA/Transfer Agreements. For example, agricultural water demands for 1970-2003 varied from a low of 2.555 MAF per year to a high of 3.172 MAF per year – a variation of 617,000 AF. The greatest variation for one year to the next was 326,000 AF, while several 2-year variations are in excess of 300,000 AF. Under the terms of the QSA/Transfer Agreements, IID has a variable demand and a fixed supply which can lead to the supply/ imbalances described above (overruns and under-runs); however, with implementation the Equitable Distribution Plan, these variations are expected to be much less.

Table 27 Basis of water year data	
Water Year Type	**Base Year(s)**
Average Water Year	1990
Single-Dry Water Year	1974
Multiple-Dry Water Years	1996-1998

Figure 70 - TABLE 27 Basis of water year data

"**Average Water Year**" means the average year of net consumptive use as compared to the consumptive use right.

"**Single-Dry Water Year**" in this plan signifies a year that the net consumptive use exceeded the consumptive use right.

"**Multiple-Dry Water Years**" in this plan signifies a stretch of three years that the net consumptive use exceeded the consumptive use right.

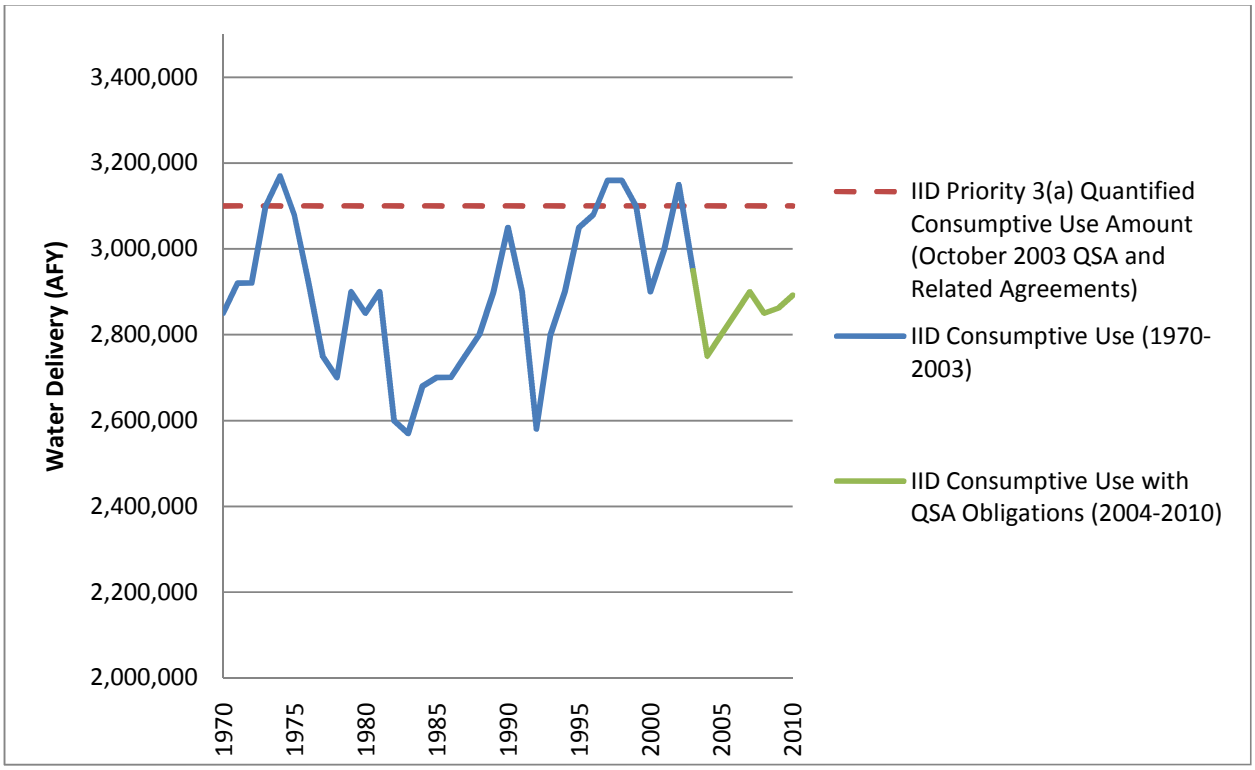

Figure 71 – IID consumptive use (at Imperial Dam) versus IID Priority 3(a) per the QSA Consumptive Use Right (1970-2010)

Table 28 Supply reliability — historic conditions				
Average / Normal Water Year	Single Dry Water Year	Multiple Dry Water Years		
		Year 1	Year 2	Year 3
1990	1974	1996	1997	1998
IID Percentage consumed over consumptive use right	3.2%	1.9%	1.9%	1.3%

Figure 72 - TABLE 28 Priority 3(a) supply reliability - historic conditions

CRWDA:Federal QSA Exhibit B: IID Quantification and Transfers, as of 2008 (KAF at Imperial Dam) [1]											
Col 1	2	3	4	5			8	9	10	11	12
	IID Priority 3a										
	IID Priority 3a Quant	IID Reductions									IID Net Consumptive Use Amount
Year		1988 MWD Transfer[2]	SDCWA Transfer	AAC Lining	Salton Sea Mitigation SDCWA Transfer	Intra-Priority 3 CVWD Transfer	MWD Transfer w\Salton Sea Restoration	Conditional ISG Backfill	Misc. PPRs	IID Total Reduction (E Cols 3 - 10)[3]	(Col 2 - Col 11)
2003	3,100	105.1	10	0	5	0	0	0	11.5	131.6	2,968.40
2004	3,100	101.9	20	0	10	0	0	0	11.5	143.4	2,956.60
2005	3,100	101.9	30	0	15	0	0	0	11.5	158.4	2,941.60
2006	3,100	101.1	40	0	20	0	0	9	11.5	181.6	2,918.40
2007	3,100	105	50	0	25	0	0	0	11.5	191.5	2,908.50
2008	3,100	105	50	67.7	25	4	20	0	11.5	283.2	2,816.80
2009	3,100	105	60	67.7	30	8	40	0	11.5	322.2	2,777.80
2010	3,100	105	70	67.7	35	12	60	0	11.5	361.2	2,738.80
2011	3,100	105	80	67.7	40	16	80	0	11.5	400.2	2,699.80
2012	3,100	105	90	67.7	45	21	100	0	11.5	440.2	2,659.80
2013	3,100	105	100	67.7	70	26	100	0	11.5	480.2	2,619.80
2014	3,100	105	100	67.7	90	31	100	0	11.5	505.2	2,594.80
2015	3,100	105	100	67.7	110	36	100	0	11.5	530.2	2,569.80
2016	3,100	105	100	67.7	130	41	100	0	11.5	555.2	2,544.80
2017	3,100	105	100	67.7	150	45	91	0	11.5	570.2	2,529.80
2018	3,100	105	130	67.7	0	63	0	0	11.5	377.2	2,722.80
2019	3,100	105	160	67.7	0	68	0	0	11.5	412.2	2,687.80
2020	3,100	105	193	67.7	0	73	0	0	11.5	450.2	2,649.80
2021	3,100	105	205	67.7	0	78	0	0	11.5	467.2	2,632.80
2022	3,100	105	203	67.7	0	83	0	0	11.5	470.2	2,629.80
2023	3,100	105	200	67.7	0	88	0	0	11.5	472.2	2,627.80
2024	3,100	105	200	67.7	0	93	0	0	11.5	477.2	2,622.80
2025	3,100	105	200	67.7	0	98	0	0	11.5	482.2	2,617.80
2026	3,100	105	200	67.7	0	103	0	0	11.5	487.2	2,612.80
2027	3,100	105	200	67.7	0	103	0	0	11.5	487.2	2,612.80
2028	3,100	105	200	67.7	0	103	0	0	11.5	487.2	2,612.80
'29-37	3,100	105	200	67.7	0	103	0	0	11.5	487.2	2,612.80
'38-47[4]	3,100	105	200	67.7	0	103	0	0	11.5	487.2	2,612.80
'48-77[5]	3,100	105	200	67.7	0	100	0	0	11.5	484.2	2,615.80

Figure 73 – IID Quantification and transfers as of 2008

Notes:

1. Information conveyed in this figure is from the United State Bureau of Reclamation's Exhibit B of the Colorado River Water Delivery Agreement (CRWDA); however, IID has adjusted the 1988 MWD Transfer values for 2003 through 2006 to reflect actual values and the values for 2007 - 2077 to reflect the new IID/MWD agreement. IID Total

Reduction and IID Net Consumptive Use Amount have been recalculated to reflect these changes.

2. By IID and MWD agreement, the 1988 IID/MWD transfer has been fixed at 105 KAFY, starting in 2007.
3. Reductions include conservation for 1988 IID/MWD Agreement Transfer, IID/SDCWA Transfer, AAC Lining (amount may vary); SDCWA Transfer Mitigation, additional MWD Transfer w/Salton Sea Restoration (amount may vary), and Misc. PPRs and allow for Conditional Interim Surplus Agreement Backfill (amount may vary). Amounts in this table are independent of increases and reductions as allowed under the Inadvertent Overrun and Payback Policy. NOTE: Shaded columns represent amounts that might vary.
4. Assumes SDCWA does not elect termination in year 35.
5. Assumes SDCWA and IID mutually consent to renewal term of 30 years.

Source: QSA CRWDA Exhibit B

Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage (10632(a)).

Table 35 Water shortage contingency — rationing stages to address water supply shortages		
Stage No.	**Water Supply Conditions**	**% Shortage**
I	Voluntary Rationing	15%
II	Rate Increases Start	25%
III	Mandatory Rationing	35%
IV	Per Capita Allotment per Customer Type	50%
[1]One of the stages of action must be designed to address a 50 percent reduction in water supply.		

Figure 74 - TABLE 35 Water shortage contingency - rationing stages to address water supply shortages

If the water supplies are reduced by 50 percent for a single year, the City will make an allotment on a per capita basis per connection and customer type.

An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply (10632(b)).

Table 31 Supply reliability — current water sources				
Water supply sources[1]	Average / Normal Water Year Supply[2]	Multiple Dry Water Year Supply[2]		
		Year 2011	Year 2012	Year 2013
Imperial Irrigation District	5,183	5,183	5,183	5,183
Percent of normal year:	100%			
Units (circle one): million gallons per year *[1]From Table 16.* *[2]See Table 27 for basis of water type years.*				

Figure 75 - TABLE 31 Supply reliability - current water sources

The water supply available to the city is determined by the water treatment plant capacity and raw water influent piping, which is currently 5,183 million gallons per year. Multiple dry water years do not affect the City's water supply.

A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis 10632(i).

Under normal water supply conditions, potable water production figures are recorded daily. Totals are reported weekly to the Water Treatment Facility Supervisor. Totals are reported monthly to the Water Department Manager and incorporated into the water supply report.

During a Stage I or Stage II water shortage, daily production figures are reported to the Supervisor. The Supervisor compares the weekly production to the target weekly production to verify that the reduction goal is being met. Weekly reports are forwarded to the Water Department Manager and the Water Shortage Response Team. Monthly reports are sent to the City Council. If reduction goals are not met, the Manager will notify the City Council so that corrective action can be taken.

During a Stage III or Stage IV water shortage, the procedure listed above will be followed, with the addition of a daily production report to the Manager. During emergency shortages, production figures are reported to the Supervisor hourly and to the Manager and the Water Shortage Response Team daily. Daily reports will also be provided to the City Council and the Imperial County Office of Emergency Services.

All surplus revenues that the City collects are currently used to fund the Rate Stabilization Fund, conservation, recycling, and other capital improvements. The City estimated projected ranges of water sales by shortage stage to best understand the impact each level of shortage will have on projected revenues and expenditures by each shortage stage.

Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier (10635(a)).

There is no foreseeable water shortage in the City of Calexico for the next 20 years. The City of Calexico uses surface water supplied by the Colorado River that can supply the City with sufficient water to meet all projected demand. Thus the City is not affected by climatic related supply shortages. California experienced a prolonged drought from 1987 through 1992 and 2007 to 2009 and in 2010 below normal runoff. The Governor declared a statewide drought and proclaimed a state of emergency in nine counties on June 4, 2008 and a statewide emergency due to the drought on February 27, 2009. The droughts, however, did not affect the City's water supply.

Supply and Demand Comparison Provisions

The City's projected average use over the next 40 years is shown below. The projections are based on the Urban Water Targets as determined in this document.

Table 32
Supply and demand comparison — normal year

	2015	2020	2025	2030
Supply totals (from Table 16)	2,927	2,860	3,252	3,697
Demand totals (From Table 11)	2,927	2,860	3,252	3,697
Difference	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%

Units are in million gallons per year.

Figure 76 - TABLE 32 Supply and demand comparison - normal year

Table 33 Supply and demand comparison — single dry year				
	2015	**2020**	**2025**	**2030**
Supply totals[1,2]	2,927	2,860	3,252	3,697
Demand totals[2,3,4]	2,927	2,860	3,252	3,697
Difference	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%

Figure 77 - TABLE 33 Supply and demand comparison - single dry year

The total demand totals through 2030 were calculated using the urban water targets and population growth estimates. The total supply is limited by the amount of water that the water treatment plant can produce and the influent raw water pipeline. The City is able to produce 5,183 million gallons of water per year. For purposes of preparing the Tables, the supply matches the forecasted demand.

The City forecasts no supply shortage at any point in the future. The Equitable Distribution Program will provide for the distribution of water in any year when expected demand for IID water is likely to exceed expected IID supply. Under the Equitable Distribution Program, when a supply/demand imbalance is declared, IID apportions the estimated supply among the various types of water users. Municipal and Commercial water users will receive the first allocation, the base amount of 2006 usage plus current District wide average use per capita multiplied by the increase in population since 2006.

Table 34 Supply and demand comparison — multiple dry-year events					
		2015	**2020**	**2025**	**2030**
Multiple-dry year first year supply	**Supply totals[1,2]**	2,927	2,860	3,252	3,697
	Demand totals[2,3,4]	2,927	2,860	3,252	3,697
	Difference	0	0	0	0
	Difference as % of Supply	0.0%	0.0%	0.0%	0.0%
	Difference as % of Demand	0.0%	0.0%	0.0%	0.0%
Multiple-dry year second year supply	**Supply totals[1,2]**	2,927	2,860	3,252	3,697
	Demand totals[2,3,4]	2,927	2,860	3,252	3,697
	Difference	0	0	0	0
	Difference as % of Supply	0.0%	0.0%	0.0%	0.0%
	Difference as % of Demand	0.0%	0.0%	0.0%	0.0%
Multiple-dry year third year supply	**Supply totals[1,2]**	2,927	2,860	3,252	3,697
	Demand totals[2,3,4]	2,927	2,860	3,252	3,697
	Difference	0	0	0	0
	Difference as % of Supply	0.0%	0.0%	0.0%	0.0%
	Difference as % of Demand	0.0%	0.0%	0.0%	0.0%

Units are in acre-feet per year.
[1]Consider the same sources as in Table 16. If new sources of water are planned, add a column to the table and specify the source, timing, and amount of water.
[2]Provide in the text of the UWMP text that discusses how single-dry-year water supply volumes were determined.
[3]Consider the same demands as in Table 3. If new water demands are anticipated, add a column to the table and specify the source, timing, and amount of water.
[4]The urban water target determined in this UWMP will be considered when developing the 2020 water demands included in this table.

Figure 78 - TABLE 34 Supply and demand comparison - multiple dry-year events

Section 6 - Water Demand Management Measures

(Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) water survey programs for single-family residential and multifamily residential customers; (B) residential plumbing retrofit; (C) system water audits, leak detection, and repair; (D) metering with commodity rates for all new connections and retrofit of existing connections; (E) large landscape conservation programs and incentives; (F) high-efficiency washing machine rebate programs; (G) public information programs; (H) school education programs; (I) conservation programs for commercial, industrial, and institutional accounts; (J) wholesale agency programs; (K) conservation pricing;(L) water conservation coordinator; (M) water waste prohibition; (N) residential ultra-lowflush toilet replacement programs (10631(f)(1) and (2).

A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan (10631(f)(3)).

An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand (10631(f)(4)).

An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier’s legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation (10631(g)).

Demand management measures and
California Urban Water Conservation Council BMP names

CUWCC BMP Organization and Names (2009 MOU)				UWMP DMMs	
Type	Category	BMP #	BMP name	DMM #	DMM name
Foundational	Operations Practices	1.1.1	Conservation Coordinator	L	Water conservation coordinator
		1.1.2	Water Waste Prevention	M	Water waste prohibition
		1.1.3	Wholesale Agency Assistance Programs	J	Wholesale agency programs
		1.2	Water Loss Control	C	System water audits, leak detection, and repair
		1.3	Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections	D	Metering with commodity rates for all new connections and retrofit of existing connections
		1.4	Retail Conservation Pricing	K	Conservation pricing
	Education Programs	2.1	Public Information Programs	G	Public information programs
		2.2	School Education Programs	H	School education programs
Programmatic	Residential	3.1	Residential assistance program	A	Water survey programs for single-family residential and multifamily residential customers[1]
				B	Residential plumbing retrofit
		3.2	Landscape water survey	A	Water survey programs for single-family residential and multifamily residential customers[1]
		3.3	High-Efficiency Clothes Washing Machine Financial Incentive Programs	F	High-efficiency washing machine rebate programs
		3.4	WaterSense Specification (WSS) toilets	N	Residential ultra-low-flush toilet replacement programs
	Commercial, Industrial, and Institutional	4	Commercial, Industrial, and Institutional	I	Conservation programs for commercial, industrial, and institutional accounts
	Landscape	5	Landscape	E	Large landscape conservation programs and incentives

[1] Components of DMM A (Water survey programs for single-family residential and multifamily residential customers) applies to both BMP 3.1 (Residential assistance program) and BMP 3.2 (Landscape water survey)

Figure 79 - Demand Management Measures and CUWCC BMP names

The following are proposed policies and programs to help the City achieve the water use reductions per the Water Conservation Bill of 2009 requirements.

The City **is a member** of the California Urban Water Conservation Council (CUWCC), which specifies the best management practices (BMP) for conserving water.

The following are current and new demand management measures (DMM):

6.1 DMM 1 – Residential Surveys

A Residential Assistance Checklist will be developed and started by the end of Fiscal Year 2012 to customers who report high water bills. It will include on-site interior and exterior detection, a landscape water survey, and a provision of low flow showerheads, aerators and information as appropriate. The City shall advise customers whenever it appears possible that leaks exist on the customer's side of the meter.

The City will provide site-specific leak detection assistance that may include, but is not limited to, the following: a water conservation survey, water efficiency suggestions, and/or inspection. The City will recommend showerheads and faucet-aerators that meet the current water efficiency standard as stipulated in the WaterSense Specifications (WSS) as needed.

The City will perform site-specific landscape water surveys that will include, but are not limited to, the following: check irrigation system and timers for maintenance and repairs needed; estimate or measure landscaped area; develop customer irrigation schedule based on precipitation rate, local climate, irrigation system performance, and landscape conditions; review the scheduling with customer; provide information packet to customer; and provide customer with evaluation results and water savings recommendations.

The City will provide reports, disaggregated by single-family and multi-family units, identifying: the number of residential assistance/leak detection survey visits completed; number of WSS showerheads distributed.

6.2 DMM 2 – Residential Plumbing Retrofit

California Civil Code Section 1101.4 and 1101.5 requires that after January 1, 2014, all noncompliant plumbing fixtures in any single-family, multi-family residential real property and any commercial residential real property be replaced with water-conserving plumbing fixtures when a permit is taken out for building additions, alterations. Also, State law requires that after January 1, 2017, noncompliant plumbing fixtures in any single-family residential property be replaced with water-conserving plumbing fixtures, and shall be verified at the time of sale or transfer.

The City's building department will verify that these codes are being enforced when a building permit is issued.

6.3 DMM 3 – System Water Audits, Leak Detection and Repair

The City will quantify the current volume of apparent and real water loss. The City will complete the standard water audit and balance using the AWWA Water Loss software to determine their current volume of apparent and real water loss and the cost impact of these losses on utility operations at no less than annual intervals.

The City may use up to four years to develop a validated data set for all entries of their water audit and balance. Data validation shall follow the methods suggested by the AWWA Software to improve the accuracy of the quantities for real and apparent losses.

The City will use the AWWA's 3rd Edition M36 Publication, *Water Audits and Loss Control Programs* (2009) for specific methods to reduce system losses.

The City will seek training in the AWWA water audit method and component analysis process (offered by CUWCC or AWWA) during the first four years of implementation, and complete a component analysis of real losses by the end of the fourth year, and update this analysis no less frequently than every four years.

The City will repair all reported leaks and breaks to the extent cost effective. By the end of the second year, The City shall establish and maintain a record-keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair. By the end of the fourth year, The City shall include estimated leakage

volume from report to repair, and cost of repair (including pavement restoration costs and paid-out damage claims, if any).

6.4 DMM 4 – Metering with Commodity Rates for New Connections and Retrofit of Existing Customers

A water meter is defined as a devise that measures the actual volume of water delivered to an account in conformance with the guidelines of the American Water Works Association. Implementation shall consist of at least the following actions:

The City ordinances currently require meters for all service connections. Meters older than 10 years are inspected and replaced if necessary. The City reads the meters and bills customers based on volume of water used every month. The customers are billed based on the volume of water used, the size of the meter and the type of connection. The City keeps records of the historical usage, meter size and type of connection. There are no unmetered customers; there are some parks and public spaces that are unmetered.

The City will keep records of when each meter was installed, repaired, tested or replaced. The meter retrofits and volumetric rates are expected to result in a 20% reduction in demand for retrofitted accounts.

6.5 DMM 5 – Large Landscape Conservation Programs and Incentives

Water demand during the summer months is much higher than during the winter. Much of the summer demand placed on the City's water distribution system is for irrigation.

New development in the city is required to use water efficient landscaping, such as Xeriscape. Landscaping located in commercial, industrial, and multifamily residential developments shall include a water efficient irrigation system in accordance with specifications provided by the Utility Department. Prior to the issuance of a building permit, a landscape documentation package is submitted by the developer for review and approval that includes a water conservation concept statement, calculation of the maximum applied water and estimated water use, irrigation design plan and landscape irrigation audit schedule. The City will provide a statement designating those portions of the landscape to be used for such purposes and specifying water needed for the water use budget,

which may not exceed 100% of ETo on an annual basis.
The City shall preserve water use records and budgets for customers with dedicated landscape irrigation accounts for at least four years.

a) Number of dedicated irrigation meter accounts.
b) Number of dedicated irrigation meter accounts with water budgets.
c) Aggregate water use for dedicated non-recreational landscape accounts with budgets.
d) Aggregate acreage assigned water budgets and average ET for dedicated non-recreational landscape accounts with budgets.
e) Number of Accounts 20% over-budget.
f) Number of accounts 20% over-budget offered technical assistance.
g) Number of accounts 20% over-budget accepting technical assistance
h) Aggregate acreage of recreational areas assigned water budgets and average ET for dedicated recreational landscape accounts with budgets.

The California Irrigation Management Information System (CIMIS) provides real time weather information to assist in irrigation scheduling. Although CIMIS was initially designed to help agricultural growers and turf managers administering parks, golf courses and other landscapes to develop water budgets for determining when to irrigate and how much water to apply, the user base has expanded over the years. In addition to those mentioned above, current CIMIS data users include local water agencies, fire fighters, air control board, pest control managers, university researchers, school teachers and students, construction engineers, consultants, hydrologists, state and federal agencies, utilities, lawyers, weather agencies, and many more.

There are a number of active CIMIS stations in the Imperial Valley, including in Seeley and Westmorland. These stations can provide evapotranspiration (ETo) information for the purpose of developing landscape water budgets and irrigation scheduling. It is estimated that this DMM will result in a 15%-20% reduction in demand for landscape irrigation.

6.6 DMM 6 – High Efficiency Washing Machine Rebate Program

A rebate program for incentives to purchase high-efficiency clothes washing machines (HECWs) is not cost effective at this time.

The City has 7,065 single-family residential water connections, and 510 multi-family connections. Assuming that there are four families per multi-family connection, there are 4*510 + 7,065 = 8,679 equivalent dwelling units with washing machines. Assuming that 10% of the population already use HECWs, there are approximately 7,800 standard washing machines that can be upgraded. Assuming that 10% of the machines are replaced with HECWs and a $100 rebate, the cost to the City will be 78 * $100, or $7,800. Assuming that the HECWs use an average of 15 gallons less water per load and there are 6 loads of wash per week per family, the benefit would be an overall saving of 365,000 gallons of water (1.1 Acre-Feet) per year. The cost to the participants was assumed to be $1,000 per unit, with a $100 rebate, or $900. The average cost of a regular washer was assumed to be $400, for a difference of $500 cost to the consumer. The total costs to the consumers are therefore $500*78= $39,000. The overall savings in water fees would be 365,000/1000 * $3.00 = $1,095.00.

6.7 DMM 7 – Public Information Programs

The City will implement a public information program to promote water conservation and water conservation-related benefits. The program will include, when possible, but is not limited to, providing speakers to employees, community groups and the media; using paid and public service advertising; using bill inserts; providing information on customers' bills showing use for the last billing period compared to the same period the year before; providing public information to promote water conservation measures; and coordinating with other government agencies, industry groups, public interest groups, and the media. The program shall include, when possible, social marketing elements which are designed to change attitudes to influence behavior. This includes seeking input from the public to shape the water conservation message; training stakeholders outside the utility staff in water conservation priorities and techniques; and developing partnerships with stakeholders who carry the conservation message to their target markets.

6.8 DMM 8 – School Education Programs

The City will implement a school education program to promote water conservation and water conservation-related benefits. Programs will include working with school districts and private schools in the service area to provide instructional assistance, educational materials, and classroom presentations that identify urban, agricultural, and environmental issues and conditions in the local watershed. Educational materials shall meet the state education framework requirements and grade-appropriate materials shall be distributed. When mutually agreeable and beneficial, a lead regional agency will operate all or part of the education program. Implementation will commence on July 1, 2012.

The City shall maintain an active school education program to educate students in the agency's service area about water conservation and efficient water use.

The school information program shall consist of some of the following:

1) Curriculum materials developed and/or provided by the City (including confirmation that materials meet state education framework requirements and are grade-level appropriate).
2) Materials distributed to K-6 students. When possible, school education programs will reach grades 7-12 as well.
3) Description of materials used to meet minimum requirement.
4) Annual budget for school education program.
5) Description of all other water supplier education programs (Lists follow in Section

6.9 DMM 9 – Commercial, Industrial and Institutional Programs

Measures to achieve the water savings goal for Commercial, industrial, and institutional (CII) accounts for the City has been mainly focused on landscaping water savings, since landscaping irrigation makes up one of the highest demands during the summer; see DMM 5.

6.10 DMM 10 – Wholesale Assistance

The City will continue to work with the Imperial Irrigation District to participate in regional DMM efforts through the Integrated Regional Water Management Plan (IRWMP), informational groups and projects, and determination of the most cost-effective DMMs.

6.11 DMM 11 – Conservation Pricing

For conservation pricing, the City uses meters for each type of water connection, billed on a monthly basis. The City's goal is to recover the maximum amount of water sales revenue from volumetric rates that is consistent with utility costs, financial stability, revenue sufficiency, and customer equity. In addition to volumetric rate(s), conservation pricing also includes the following other charges:

1) Service connection charges designed to recover the separable costs of adding new customers to the water distribution system.

2) Monthly meter/service charges to recover costs unrelated to the volume of water delivered or new service connections and to ensure system revenue sufficiency.

3) Special rates and charges for temporary service, fire protection service, and other irregular services provided by the City.

The water rate is $43.89 per month fixed charge, which includes up to 3,000 cubic feet of water per month (22,000 gallons). After 3000 cubic feet (30 HCF) usage, water is billed at $2.22 every 100 cubic foot thereafter. The fixed service charge is large in comparison to the volumetric rate.

The City's total annual revenue from the volumetric rate divided by the total annual revenue of volumetric rate plus the total annual revenue from the fixed service charge was less than 25% in 2010. **This should be over 70% for conservation pricing.**

Let V stand for the total annual revenue from the volumetric rate(s) and M stand for total annual revenue from customer meter/service (fixed) charges, then:

$$\frac{V}{V + M} > 70\%$$

The City's water rates are not conducive to conservation pricing, because each connection is allocated 30 HCF regardless of the amount of water actually needed. The City should review its water rate structure and complete a water rate study to implement this demand management measure. The fixed charge should be small compared to the volumetric pricing.

6.12 DMM 12 – Conservation Coordinator

The City will designate a person as the City's responsible conservation coordinator for program management, tracking, planning, and reporting on the DMM implementation. This may be a regional position.

6.13 DMM 13 – Water Waste Prohibition

The City enacted a No Waste Resolution prohibiting wasteful use of water is a part of the UWMP shown in **Appendix C**. The Resolution is titled "PROHIBITING WASTEFUL USE OF WATER REGULATIONS AND RESTRICTIONS ON WATER USE".

6.14 DMM 14 – Residential High Efficiency Toilet (HET) Replacement Programs

The City requires compliance with state regulations for water efficient devices in new construction, per the Uniform Building Code. Retailers in California are generally required to provide only high water efficiency toilets and appliances. Also, the State of California has enacted legislation to require retrofit for houses for sale or during rehabilitation.

APPENDIX A

List of agencies that were contacted during the Development of This Plan:

Imperial Irrigation District Resources Planning and Management staff
GEI Consultants, Inc. in preparation of the IRWMP
Members of the public who submitted draft plan comments
Individual Coordinating Agency Staff

Brawley:
Ruben Mireles, City of Brawley (760) 344-5800 ext 11
400 Main St. Plant (760) 344-2698
Brawley, CA 92227 Fax (760) 344-0202

El Centro:
Hector Munoz, El Centro
3010 S. 8th St./1275 Main St. (760) 337-4575
El Centro, CA 92243 Fax (760) 337-4576
City of El Centro 3010 S. 8th St./1275 Main St.

Calexico:
Victor Rodriguez, Water Department Supervisor
City of Calexico
545 Pierce Ave. / 608 Heber Ave. (760) 768-2162
Calexico, CA 92231 Fax (760) 768-3661

Imperial:
Jorge Galvan, AICP
Planning Manager (760) 355-3326
420 South Imperial Avenue Fax (760) 355-4718
Imperial, CA 92251

Imperial Irrigation District
Anisa Divine, Ph.D., Senior Planner
Imperial Irrigation District
Agricultural Water Management Section
333 E. Barioni Blvd. (760) 339-9036
Imperial, CA 92251 Fax (760) 339-9009

APPENDIX B

Resolution to Adopt the Urban Water Management Plan

CITY OF CALEXICO
IMPERIAL COUNTY, CALIFORNIA
September 6, 2011

The City Council of the City of Calexico does hereby resolve as follows:

WHEREAS the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare an Urban Water Management Plan, the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS the City is an urban supplier of water providing water to a population over 17,000, and

WHEREAS the Plan shall be periodically reviewed at least once every five years, and that the City shall make any amendments or changes to its plan which are indicated by the review; and

WHEREAS the Plan must be adopted after public review and hearing, and filed with the California Department of Water Resources within thirty days of adoption; and

WHEREAS the City has therefore, prepared and circulated for public review a draft Urban Water Management Plan, and a properly noticed public hearing regarding said Plan was held by the City Council on September 6, 2011, and

WHEREAS the City of Calexico did prepare and shall file said Plan with the California Department of Water Resources by September 30, 2011;

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

The 2010 Urban Water Management Plan is hereby adopted and ordered filed with the

City Clerk; The Mayor is hereby authorized and directed to file the 2010 Urban Water Management Plan with the California Department of Water Resources within 30 days after this date;

The Mayor is hereby authorized and directed to implement the Water Conservation Programs as set forth in the 2011 Urban Water Management Plan, which includes water shortage contingency analysis and recommendations to the City Council regarding necessary procedures, rules, and regulations to carry out effective and equitable water conservation programs;

In a water shortage, the Mayor is hereby authorized to declare a Water Shortage Emergency according to the Water Shortage Stages and Triggers indicated in the Plan, and implement necessary elements of the Plan;

The Mayor shall recommend to the City Council additional regulations to carry out effective and equitable allocation of water resources; and

The attached budget is approved and authorized for implementation.

ADOPTED this 6th day of September 2011, by the following vote:
AYES:
NOES:
ABSENT:
ABSTAIN:
ATTEST:
City Clerk

City Council Members
(indicate names) Mayor

Director, Public Works
Department

Chief, Water Department

Approved as to Form and Legality:
City Attorney

APPENDIX C

No Waste Ordinance

CITY OF CALEXICO
IMPERIAL COUNTY,
CALIFORNIA Date

The City Council of the City of Calexico does hereby resolve as follows:
The Municipal Code of the City of Calexico is hereby amended by adding Section XX to Chapter XX, to read as follows:

XX-5 PROHIBITING WASTEFUL USE OF WATER REGULATIONS AND RESTRICTIONS ON WATER USE

It is hereby resolved by the City Council that in order to conserve the City's water supply for the greatest public benefit and to reduce the quantity of water used by the City's customers, that wasteful use of water should be eliminated. Customers of the City shall observe the following regulations and restrictions on water use:

1. No customer shall waste water. As used herein, the term "waste" means:

    a. Use of potable water to irrigate turf, ground-cover, shrubbery, crops, vegetation, and trees between the hours of 10:00 o'clock A.M. and 6:00 o'clock P.M. or in such a manner as to result in runoff for more than five (5) minutes;
    b. Use of potable water to wash sidewalks, walkways, driveways, parking lots, open ground or other hard surfaced areas except where necessary for public health or safety;
    c. Allowing potable water to escape from breaks within the customer's plumbing system for more than twenty-four hours after the customer is notified or discovers the break;
    d. Washing cars, boats, trailers, aircraft, or other vehicles by hose without a shutoff nozzle and bucket except to wash such vehicles at commercial or fleet vehicle washing facilities using water recycling equipment.
    e. Use of potable water to clean, fill or maintain decorative fountains, lakes or ponds.

2. The following restrictions are effective during a declared Water-Shortage Emergency.

    a. No restaurant, hotel, cafe, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any customer unless requested.
    b. Use of potable water for construction, compaction, dust control, street or parking lot sweeping, building wash down where non-potable water is sufficient.
    c. Use of potable water for sewer system maintenance or fire protection training without prior approval by the Mayor;
    d. Use of potable water for any purpose in excess of the amount allocated.

3. Other restrictions may be necessary during a declared Water Shortage Emergency, to safeguard the adequacy of the water supply for domestic, sanitation, fire protection, and environmental requirements.

Enforcement

Any customer violating the regulations and restrictions on water use set forth in this chapter shall receive a written warning for the first such violation. Upon a second violation, the customer shall receive a written warning and the district may cause a flow-restrictor to be installed in the service. If a flow-restrictor is placed, the cost of installation and removal shall be paid by the violator. Any willful violation occurring subsequent to the issuance of the second written warning shall constitute a misdemeanor and may be referred to the City Attorney's Office for prosecution. The City may also disconnect the water service. If water service is disconnected, it shall be restored only upon payment of the turn-on charge fixed by the City Council.

Penalty for violations

Except as provided in the enforcement section for the first and second violations any person, firm, partnership, association, corporation or political entity violating or causing or permitting the violation of any of the provisions of this section or providing false information to the City in response to City's requests for information needed by the City to calculate consumer water allotments shall be guilty of a misdemeanor punishable by imprisonment in the county jail for not more that thirty days or by a fine not exceeding one thousand dollars or both. Each separate day or portion thereof in which any violation occurs or continues without a good faith effort by the responsible party to correct the violation shall constitute a separate offense and, upon conviction thereof, shall be separately punishable.

Appeals

Variances from the requirements of this Section may be granted by the City Council only after denial of a variance request by the City Manager. Appeals of variance request denials shall be made in writing to the City Clerk at least 2 weeks prior to the meeting at which they will be heard. Upon granting any appeal, the City Council may impose any conditions it determines to be just and proper. Variances granted by the City Council shall be prepared in writing and furnished to the applicant.

Remedies/Cumulative

The remedies available to the City to enforce this ordinance are in addition to any other remedies available under the City's code or any state statutes or regulations, and do not replace or supplant any other remedy, but are cumulative.

Resolution to Declare a Water Shortage Emergency

CITY OF CALEXICO
IMPERIAL COUNTY,
CALIFORNIA Date

The City Council of Calexico does hereby resolve as follows:

PURSUANT to California Water Code Section 350 et seq., the Council has conducted duly noticed public hearings to establish the criteria under which a water shortage emergency may be declared.

WHEREAS, the Council finds, determines and declares as follows:

(a) The City is the water purveyor for the property owners and inhabitants of Calexico;

(b) The demand for water service is not expected to lessen.

(c) When the potable water supply available to the City falls at or below the Stage II triggering levels described in the 2010 Urban Water Management Plan, the City will declare a water shortage emergency. The water supply would not be adequate to meet the ordinary demands and requirements of water consumers and there may be insufficient water for human consumption, sanitation, fire protection, and environmental requirements. This condition is likely to exist until groundwater contamination is remedied and/or water system damage resulting from a disaster are repaired and normal water service is restored.

NOW, THEREFORE, BE IT RESOLVED that the City Council of Calexico hereby directs the Mayor to find, determine, declare and conclude that a water shortage emergency condition exists that threatens the adequacy of water supply, until the City's water supply is deemed adequate and potable. After the declaration of a water shortage emergency, the Mayor is directed to determine the appropriate Rationing Stage and implement the City's Water Shortage Emergency Response.

FURTHERMORE, the Council shall periodically conduct proceedings to determine additional restrictions and regulations which may be necessary to safeguard the adequacy and quality of the water supply for domestic, sanitation, fire protection, and environmental requirements.

Moratorium On New Connections During A Water Shortage

CITY OF CALEXICO
IMPERIAL COUNTY,
CALIFORNIA Date

The City Council of Calexico does hereby resolve as follows:
The Municipal Code of the City of Calexico is hereby amended to read as follows:

XX-5 MORATORIUM ON SERVICE COMMITMENTS AND CONNECTIONS

1 When the City declares a water shortage emergency, the following regulations shall become effective immediately and shall continue in full force and effect to prohibit the following while it remains in full force and effect:

a. Irrigation for landscaping shall be prohibited.
b. The City shall not issue oral or written commitments to provide new or expanded water service, including will-serve letters.
c. The City shall not sell meters for water service connections, despite the prior issuance of will-serve letters or other oral or written service commitments, unless building permits have been issued.
d. The City shall not provide new or expanded water service connections, despite the prior issuance of will-serve letters or other oral or written service commitments and meters, unless building permits have been issued.
e. The City shall not provide water for use on any new plantings installed after the declaration of a Water Shortage Emergency.
f. The City shall not annex territory located outside the City's service boundary.

2. The following uses are exempt from the moratorium and upon application to the City shall receive necessary water service commitments and connections to receive water from the City:

a. Uses, including but not limited to, commercial, industrial, single and multifamily residential, for which a building permit has been issued by the City on or before the declaration of a Water Shortage Emergency.
b. Uses, including but not limited to, commercial, industrial, single and multifamily residential, for which a retail meter had been purchased from the City before the declaration of a Water Shortage Emergency, as evidenced by a written receipt and for which a building permit has been issued and remains in full force and

effect.

d. Publicly owned and operated facilities, including but not limited to schools, fire stations, police stations, and hospitals and other facilities as necessary to protect the public health, safety and welfare.

Water Shortage Rationing Allocation Method

Single-family account allocations may be determined as follows: assuming 4 persons or less per home, an account would receive 11 HCF per month (68 gpcd) plus 55% of their historic use, not to exceed an upper limit. The upper limit on additional water may be 30 HCF per year (i.e., 132 HCF + 50% historic ≤ 162 HCF a year). Appeals would be available for additional people. For each additional person at a home the allotment is increased by 4 HCF per billing period (49 gcd).

Multi-residential account allocations may be determined as follows: assuming 3 persons or less per unit, accounts receive 6 HCF per unit per month (49 gcd), plus 40% of their historic use, not to exceed an upper limit. The upper limit on additional water may be 10 HCF per year per unit (i.e., 72 HCF + 40% historic ≤ 82 HCF a year). Appeals would be available for additional people. For each additional person, the allotment increases by 4 HCF per billing period (49 gcd).

Increased allocations for residential accounts would be limited to the following:

1. Greater number of residents than assumed by plan.
2. Medical conditions requiring additional water.

Commercial, Industrial and Institutional would receive a percentage reduction from historical use. The historical use period used to determine the baseline amount may vary based on specific factors. Appeals would be available for increased business, census or other factors.

APPENDIX D

Establishment of Rate Increases During a Water Shortage

In order to mitigate the financial impacts of a water shortage, the City has established an Emergency Fund. The goal is to maintain the fund at 75% of normal water department revenue. This fund will be used to stabilize rates during periods of water shortage or disasters affecting the water supply. The City will not have to increase rates as much or as often during a prolonged or severe shortage.

However, even with the emergency fund, rate increases will be necessary during a prolonged water shortage. As described in this Plan, a Stage II shortage will be accompanied by a 15- 25% reduction in water deliveries while a Stage III will be accompanied by a 25 -35% reduction. The experiences of California water purveyors during the 1990-91 water shortage demonstrated that actual water use reductions by customers are usually considerably larger that those requested by the supplier. During the 1990-91 water shortage it was also politically difficult for many agencies to adopt the rate increases necessitated by a 20% to 50% reduction in sales. When a Water Shortage Emergency is declared, the supply shortage will trigger the appropriate Rationing Stage and rate increase.

Water rates increase by the following percentages when the indicated Stages are implemented:

Stage I	no rate increase
Stage II	25% increase over pre-shortage rates
Stage III	50% increase over pre-shortage rates
Stage IV	100% increase over pre-shortage rates

End of the Water Shortage Emergency

15% increase over pre-shortage rates (This rate increase should be re-evaluated every two years)

Most California water agencies, which experienced water shortages, found that customer demand did not return to pre-shortage levels. After a shortage, water department expenses are expected to drop below pre-shortage levels but water sales are not expected to rebound. In anticipation of reduced sales, after a declared shortage ends, the City's rates will be set for one year at 115% of the pre-shortage rates. Any excess revenues collected as a result of this rate adjustment will be used for the Rate Stabilization Fund.

APPENDIX E

IMPERIAL IRRIGATION DISTRICT ANNUAL INVENTORY OF AREAS RECEIVNG WATER, YEARS 2008-2010

IMPERIAL IRRIGATION DISTRICT
ANNUAL INVENTORY OF AREAS RECEIVING WATER
YEARS 2010, 2009, 2008

I CROP SURVEY

GARDEN CROPS	ACRES 2010	2009	2008
ALOE VERA	75	77	77
ARTICHOKE	19	33	132
ARTICHOKE (SEED)	0	0	9
BEANS	59	150	0
BLACKEYED PEAS	195	126	76
BROCCOLI	11,072	10,917	11,519
BROCCOLI (SEED)	140	0	0
CABBAGE	1,147	953	1,235
CABBAGE, CHINESE	278	97	85
CARROTS	12,503	14,187	14,962
CAULIFLOWER	2,455	3,461	2,564
CELERY	639	403	316
CELERY (SEED)	130	0	36
CILANTRO	558	221	270
COLLARDS	4	0	0
CORN, SWEET	8,800	5,978	6,285
CUCUMBERS	0	0	28
EGGPLANT	11	0	2
ENDIVE	0	666	743
FLOWERS	169	149	198
GARBANZO BEANS	126	0	36
HERBS, MIXED	114	179	30
HERBS, MIXED (SEED)	10	0	0
KALE	54	125	220
LETTUCE	13,046	15,675	17,051
LETTUCE, BUTTER	0	42	0
LETTUCE, CHINESE	0	214	0
LETTUCE, GREEN	136	454	586
LETTUCE, RED	68	0	0
LETTUCE, MIXED	8,903	7,695	9,430
LETTUCE, ROMAINE	5,031	5,866	4,231
MELONS			
CANTALOUPES, FALL	88	33	474
CANTALOUPES, SPRING	6,626	5,631	5,948
HONEYDEW, SPRING	65	0	363
MIXED, FALL	56	20	0
MIXED, SPRING	675	670	836
WATERMELONS	1,171	844	1,231
MUSTARD	600	212	241
MUSTARD (SEED)	4	15	0
OKRA	610	373	360
ONIONS	8,366	9,813	10,223
ONIONS (SEED)	1,535	1,197	1,172
PARSLEY	22	0	4
PARSNIPS	0	0	25
PEAS	6	12	17
PEPPERS, BELL	63	63	103
POTATOES	1,347	1,432	1,938
RADISHES	0	16	51
RAPINI	1,571	1,652	1,789
ROCKETT	0	0	20
SPINACH	4,010	2,362	2,684
SQUASH	70	40	22
SWEET BASIL	138	75	70
SWISS CHARD	200	179	73
THYME	0	0	168
TOMATOES, FALL	0	16	0
TOMATOES, SPRING	145	44	0
TURNIPS	63	0	0
VEGETABLES, MIXED	2,406	2,312	2,421
TOTAL GARDEN CROPS	**95,579**	**94,679**	**100,354**

FIELD CROPS	ACRES 2010	2009	2008
ALFALFA, FLAT	82,708	74,971	65,577
ALFALFA, ROW	34,298	32,467	31,967
ALFALFA (SEED)	23,269	32,325	30,123
ALICIA GRASS	0	65	65
BAMBOO	192	198	198
BARLEY	95	184	27
BERMUDAGRASS	28,132	28,461	29,737
BERMUDAGRASS (SEED)	25,968	26,291	27,450
CORN, FIELD	1,266	1,077	2,200
CORN, SILAGE	17	17	478
COTTON	437	0	0
FLAX	0	106	10
GRASS, MIXED	338	1,590	335
KLIENGRASS	12,415	14,016	14,889
OATS	1,491	2,386	2,395
RAPESEED	169	113	100
RYEGRASS	2,342	2,490	1,938
SAFFLOWER	436	311	132
SESBANIA	944	814	1,587
SORGHUM GRAIN	650	1,973	1,310
SORGHUM SILAGE	304	265	424
SOY BEANS	0	75	33
SPIRULINA ALGAE	28	98	98
SUDANGRASS	52,807	32,670	66,513
SUDANGRASS (SEED)	310	241	1,615
SUGARBEETS	25,188	18,022	23,773
SUGARCANE	594	1,131	1,184
TRITICALE GRAIN	104	105	0
WHEAT	57,464	108,451	111,050
TOTAL FIELD CROPS	**351,966**	**380,913**	**415,208**

PERMANENT CROPS	ACRES 2010	2009	2008
ASPARAGUS	98	92	283
CITRUS			
GRAPEFRUIT	468	1,221	1,239
LEMONS	1,596	3,028	2,863
LIMES	0	17	25
MIXED	4,468	748	1,211
ORANGES	198	358	418
TANGERINES	605	1,021	991
DATES	846	578	604
DUCK PONDS	10,307	10,309	9,864
EUCALYPTUS	9	9	9
FIGS	150	80	80
FISH FARMS	1,161	1,005	908
FRUIT, MIXED	4	102	25
GRAPES	0	0	4
GUAVA	25	25	0
MANGOS	150	150	150
NURSERY	53	53	65
ORNAMENTAL TREES	32	15	15
PALMS	214	174	122
PASTURE, PERMANENT	574	521	658
PEACHES	23	84	7
PECANS	0	8	10
POMEGRANATES	10	160	202
TOTAL PERMANENT CROPS	**20,991**	**19,758**	**19,753**

TOTAL ACRES OF CROPS	**468,536**	**495,350**	**535,315**

Note: Crops are listed for the year in which they are predominately harvested.

II ACCOUNT SUMMARY

	2010		2009		2008	
Number of Farm Accounts	6,101		6,201		6,353	
Number of Owner-Operated Farm Accounts	2,412	39.5%	2,491	40.2%	2,423	38.1%
Number of Tenant-Operated Farm Accounts	3,689	60.5%	3,710	59.8%	3,930	61.9%
Average Acreage of Farm Account	77.72		76.42		74.41	

III SUMMARY OF AREA SERVED

	2010	2009	2008
Field Crops	351,966	380,913	415,208
Garden Crops	95,579	94,679	100,354
Permanent Crops	20,991	19,758	19,753
TOTAL ACRES OF CROPS	**468,536**	**495,350**	**535,315**
Total Multiple Cropped Acres	36,898	63,323	105,718
TOTAL NET ACRES IN CROPS	**431,638**	**432,027**	**429,597**
Area Being Reclaimed: Leached	185	131	120
NET AREA IRRIGATED	**431,823**	**432,158**	**429,717**
IID Fallowing Program (Avg of two mid-year periods)	17,253	15,317	14,476
Area Farmable But Not Farmed During Year (Fallowed Land)	25,064	26,428	28,525
TOTAL AREA FARMABLE	**474,140**	**473,903**	**472,718**
Area Of Farms In Homes, Feed Lots, Corrals, Cotton Gins, Experimental Farms, and Industrial Areas	16,139	16,723	17,947
Area In Cities, Towns, Airports, Cemeteries, Fairgrounds, Golf Courses, Recreational, Parks, Lakes and Rural Schools	29,995	29,836	29,833
TOTAL AREA RECEIVING WATER	**520,274**	**520,462**	**520,498**
Area In Drains, Canals, Reservoirs, Rivers, Railroads, and Roads	74,735	74,547	74,511
Area Below -230 Salton Sea Reserve Boundary & Area Covered By Salton Sea, Less Area Receiving Water	40,150	40,150	40,150
Area in Imperial Unit Not Entitled To Water	63,933	63,933	63,933
Undeveloped Area Of Imperial, West Mesa, East Mesa, and Pilot Knob Units	277,629	277,629	277,629
TOTAL ACREAGE INCLUDED - ALL UNITS	**976,721**	**976,721**	**976,721**
Acreage Not Included - All Units *	84,916	84,916	84,916
TOTAL GROSS ACREAGE WITHIN DISTRICT BOUNDARIES	**1,061,637**	**1,061,637**	**1,061,637**

IMPERIAL IRRIGATION DISTRICT

CARLOS Z. VILLALÓN
Interim Manager
Water Department

* Acreage within District boundaries that is not included in District.

APPENDIX F

Colorado River Water Delivery Agreement: Federal Quantification Settlement Agreement (QSA)

THE SECRETARY OF THE INTERIOR

WASHINGTON

Colorado River Water Delivery Agreement:

Federal Quantification Settlement Agreement

for purposes of Section 5(B) of

Interim Surplus Guidelines

Approved:

Gale A. Norton

Gale A. Norton
Secretary of the Interior

Oct. 10, 2003

Date

COLORADO RIVER WATER DELIVERY AGREEMENT

The United States by and through the Secretary of the Interior (Secretary) hereby enters into this Colorado River Water Delivery Agreement (Agreement) with the Imperial Irrigation District (IID), the Coachella Valley Water District (CVWD), The Metropolitan Water District of Southern California (MWD) (these three districts are collectively referred to herein as the Districts), and the San Diego County Water Authority (SDCWA). The Secretary, IID, CVWD, MWD and SDCWA hereby agree as follows:

RECITALS

A. By regulations dated September 28, 1931, the Secretary incorporated the schedule of priorities provided in the Seven Party Agreement dated August 18, 1931, and established priorities One through Seven for use of the waters of the Colorado River within the State of California. The regulations were promulgated pursuant to the Boulder Canyon Project Act (BCPA) and required that contracts be entered into for the delivery of water within those priorities.

B. The Secretary has entered into contracts with, among others, the Palo Verde Irrigation District (PVID), IID, CVWD, and MWD, for the delivery of Colorado River water pursuant to Section 5 of the BCPA (Section 5 Contracts). Under those Section 5 Contracts, PVID, IID, CVWD and MWD have certain rights to the delivery of Colorado River water, which for PVID and IID include the satisfaction of present perfected rights in accordance with Section 6 of the BCPA. MWD and CVWD also have surplus water delivery contracts with the Secretary.

C. IID, CVWD, MWD and SDCWA have entered into agreements relating to, among other matters, their respective beneficial consumptive use of Colorado River water and desire that, for the term of this Agreement, Colorado River water be delivered by the Secretary in the manner contemplated in this Agreement.

D. The Secretary has the authority to enter into this Agreement on behalf of the United States pursuant to the BCPA, the 1964 Decree in Arizona v. California, and other applicable authorities.

OPERATIVE TERMS

1. WATER DELIVERY CONTRACTS

a. Priorities 1, 2, 3(b), 6(b), and 7 of current Section 5 Contracts for the delivery of Colorado River water in the State of California and Indian and miscellaneous Present Perfected Rights (PPRs) within the State of California and other existing surplus water contracts are not affected by this Agreement.

b. The Secretary agrees to deliver Colorado River water in the manner set forth in this Agreement during the term of this Agreement. The Secretary shall cease delivering water pursuant to this Agreement at the end of the term of this Agreement; provided, however, that the Secretary's delivery commitment to the San Luis Rey Indian Water Rights Settlement Parties (SLR) shall not terminate at the end of the term but shall instead continue, pursuant to Section 106 of Public Law 100-675, 102 Stat. 4000 et seq., as amended, subject to the terms and conditions of any applicable agreement to which the Secretary is a party concerning the allocation of water to be conserved from the lining of the All-American and Coachella Canals.

c. The Districts' respective Section 5 Contracts shall remain in full force and effect and, with this Agreement, shall govern the delivery of Colorado River water.

2. QUANTIFICATION OF PRIORITY 3(a)

a. Except as otherwise determined under the Inadvertent Overrun and Payback Policy identified in Section 9 of this Agreement, the Secretary shall deliver Priority 3(a) Colorado River water to IID in an amount up to but not more than a consumptive use amount of 3.1 million acre-feet per year (AFY) less the amount of water equal to that to be delivered by the Secretary for the benefit of CVWD, MWD, SDCWA, SLR, and Indian and miscellaneous PPRs as set forth in Exhibits A and B hereto. Colorado River water acquired by IID after the date of this Agreement, and where necessary approved by the Secretary, shall not count against this cap.

b. Except as otherwise determined under the Inadvertent Overrun and Payback Policy, the Secretary shall deliver Priority 3(a) Colorado River water to CVWD in an amount up to but not more than a consumptive use amount of 330,000 AFY less the amount of water equal to that to be delivered by the Secretary for the benefit of IID, MWD, SDCWA, SLR, and Indian and miscellaneous PPRs as set forth in Exhibits A and B hereto. Colorado River water acquired by CVWD in any transaction to the extent agreed upon prior to or concurrent with the execution of this Agreement by IID and MWD and, where necessary approved by the Secretary, shall not count against this cap.

3. QUANTIFICATION OF PRIORITY 6(a)

a. Subject to any rights that PVID may have, and except as otherwise provided under the Interim Surplus Guidelines, or under the agreements contemplated by those guidelines, the Secretary shall deliver Priority 6(a) water to MWD, IID and CVWD in the following order and consumptive use volumes: (i) 38,000 AFY to MWD; (ii) 63,000 AFY to IID; and (iii) 119,000 AFY to CVWD, or as those parties may agree to occasionally forbear.

b. Any water not used by MWD, IID or CVWD as set forth above will be available to satisfy the next listed amount in Section 3.a. above. Any additional water available for Priority 6(a) shall

be delivered by the Secretary in accordance with IID and CVWD's entitlements under their respective Section 5 Contracts in effect as of the date of this Agreement.

4. TRANSFERS AND OTHER WATER DELIVERY COMMITMENTS

a. The Secretary shall deliver IID's Priority 3(a) entitlement for the benefit of IID and others as specified in Exhibits A and B hereto and in the amounts and to the points of delivery set forth therein.

b. The Secretary shall deliver CVWD's Priority 3(a) entitlement for the benefit of the CVWD and others as specified in Exhibits A and B hereto and in the amounts and to the points of delivery set forth therein.

c. At SDCWA's election, the Secretary shall deliver water made available for SDCWA's benefit as set forth in Exhibits A and B hereto to the intake facilities for the Colorado River Aqueduct and SDCWA may then exchange up to 277,700 AFY of Colorado River water with MWD at Lake Havasu.

d. If in any given calendar year that the use of Colorado River water in accordance with Priorities 1 and 2, together with the use of Colorado River water on PVID Mesa lands in accordance with Priority 3(b), exceeds the consumptive use amount of 420,000 AFY, the Secretary will reduce the amount of water otherwise available to MWD in Priorities 4, 5 or 6(a) by the amount that such use exceeds 420,000 AFY. To the extent that the amount of water used in accordance with Priorities 1, 2 and 3(b) is less than 420,000 AFY, the Secretary shall deliver to MWD the difference.

e. 1. The Secretary shall deliver to CVWD at Imperial Dam the consumptive use amount of 20,000 AFY or such lesser consumptive use amount as may be requested by CVWD of Priority 3(a) Colorado River water made available to MWD under the Agreement for the Implementation of a Water Conservation Program and Use of Conserved Water between IID and MWD dated December 22, 1988, as amended.

2. Beginning in 2048 and in each year thereafter, the Secretary shall deliver to CVWD at Imperial Dam the consumptive use amount of 50,000 AFY or such lesser consumptive use amount as may be requested by CVWD from the Colorado River water available to MWD.

3. When requested by MWD for the purpose of satisfying an exchange obligation to CVWD under an agreement between CVWD and MWD for exchange of CVWD's State Water Project water, the Secretary shall deliver to CVWD at Imperial Dam the consumptive use amount of 135,000 AFY or such lesser amount as may be requested by MWD.

f. CVWD may decline to take a portion of the water to be conserved by IID for CVWD. In this event, the Secretary shall instead deliver such portion of the water to IID or MWD, or to other unspecified water users provided, further, that any such delivery to an unspecified user is, where necessary, subject to Secretarial approval.

g. Colorado River water will be made available to MWD through forbearance under the existing priority system as a result of a proposed land management program between PVID landowners and MWD. Neither IID nor CVWD will make any claim to or object to delivery to MWD of PVID program water to the extent agreed upon prior to or concurrent with the execution of this Agreement by IID and CVWD. If the transfer of PVID program water is not implemented, then IID has agreed to transfer for the benefit of MWD/SDCWA amounts necessary to meet the minimum Benchmark Quantities as set forth in Section 5(C) of the Interim Surplus Guidelines, not to exceed 145,000 AF in the aggregate.

h. CVWD may utilize Colorado River water outside of Improvement District No. 1 to the extent consented to and agreed upon prior to or concurrent with the execution of this Agreement by IID and MWD.

i. Notwithstanding the transfers set forth in this section and Exhibit B, IID, CVWD, MWD and SDCWA recognize and agree that at the conclusion of the effective period of the Interim Surplus Guidelines, they shall have implemented sufficient measures to be able to limit total uses of Colorado River water within California to 4.4 million AFY, unless the Secretary determines a surplus under a 70R strategy.

5. SHORTAGES

a. The Secretary's authority under II.B.3 of the 1964 Decree in Arizona v. California is not limited in any way by this Agreement.

b. If for any reason there is less than 3.85 million AFY available under Priorities 1, 2 and 3 during the term of this Agreement, any water which is made available by the Secretary to IID and CVWD shall be delivered to IID, CVWD, MWD, and SDCWA in accordance with the shortage sharing provisions agreed upon prior to or concurrent with the execution of this Agreement by IID, CVWD, MWD and SDCWA.

6. TERM

a. This Agreement will become effective upon execution of this Agreement by all Parties.

b. This Agreement will terminate on December 31, 2037, if the 1998 IID/SDCWA transfer program terminates in that year.

c. If this Agreement does not terminate on December 31, 2037, then this Agreement will terminate on December 31, 2047 unless extended by agreement of all parties until December 31, 2077, in which case this Agreement will terminate on December 31, 2077.

d. The Secretary's delivery commitment to the SLR and the Districts' recognition and acceptance of that delivery commitment, shall not terminate but shall instead continue, pursuant to Section 106 of Public Law 100-675, 102 Stat. 4000 et seq., as amended.

7. INTERIM SURPLUS GUIDELINES

The Secretary finds that execution of this Agreement constitutes "all required actions" that the relevant California Colorado River water contractors are required to undertake pursuant to Section 5(B) of the Interim Surplus Guidelines. Accordingly, upon execution of this Agreement by all parties, the interim surplus determinations under Sections 2(B)(1) and 2(B)(2) of the Interim Surplus Guidelines are reinstated.

8. BENCHMARKS FOR THE STATE OF CALIFORNIA'S AGRICULTURAL USE

a. The parties to this Agreement agree to carry out the transfers identified in Section 4 above and in Exhibit A hereto in accordance with the schedule set forth in Exhibit B hereto. Nothing in this Agreement authorizes or precludes carrying out the transfers on a timetable sooner than provided in the schedule set forth in Exhibit B hereto. The transfers in the schedule set forth in Exhibit B hereto are undertaken to allow California agricultural usage (by PVID, Yuma Project Reservation Division, IID, and CVWD) plus 14,500 af of PPR use to be at or below the Benchmark Quantities as set forth in Section 5(C) of the Interim Surplus Guidelines. Nothing in this Agreement authorizes or precludes additional transfers of Colorado River water as agreed upon prior to or concurrent with the execution of this Agreement by the Districts to meet the Benchmark Quantities as set forth in Section 5(C) of the Interim Surplus Guidelines. All determinations by the Secretary with respect to this section shall be based upon Decree Accounting. Repayment of overrun amounts shall not count toward compliance with the transfers in the schedule set forth in Exhibit B hereto or toward compliance with the Benchmark Quantities set forth in Section 5(C) of the Interim Surplus Guidelines.

b. In the event that i) the transfers are carried out as set forth in the schedule in Exhibit B hereto or additional Colorado River transfers as agreed upon prior to or concurrent with the execution of this Agreement by the Districts are carried out and ii) California's Agricultural usage plus 14,500 af of PPR use is at or below the Benchmark Quantities as set forth in Section 5(C) of the Interim Surplus Guidelines, the provisions of this subparagraph shall apply.
1. Notwithstanding the provisions of the November 22, 2002 Supplement to the 2002 Annual Operating Plan, any existing overruns in calendar years 2001 and 2002 by parties to this Agreement must be repaid within an eight-year period beginning in calendar year 2004 in

accordance with the schedule attached in Exhibit C hereto, except that in the event that any Annual Operating Plan 24-Month Study indicates that a shortage will occur within months 13 through 24, any remaining balance of the 2001 and 2002 overruns shall be fully repaid during the next calendar year. Repayment of any overruns other than from calendar years 2001 and 2002 shall be pursuant to the Inadvertent Overrun and Payback Policy identified in Section 9 below.

2. The Secretary has considered the quantification of Priority 3(a) as set forth in Section 2 of this Agreement and the water transfers set forth in the schedule in Exhibit B hereto. These water transfers were developed to assist the Districts and SDCWA to meet the provisions of Section 4(i) of this Agreement and to reduce the occurrence of future reasonable and beneficial use reviews under 43 C.F.R. Pt. 417 to unique circumstances. These water transfers are based upon water conservation activities to be implemented over the term of this Agreement. For these reasons, the Secretary does not anticipate any further review of the reasonable and beneficial use of Colorado River water by IID pursuant to the annual 43 C.F.R. Pt. 417 reviews that are conducted during the initial term of this Agreement as set forth in Section 6.b. (December 31, 2037). Should the Secretary engage in any further review of the reasonable and beneficial use of Colorado River water by IID pursuant to 43 C.F.R. Pt. 417 under this Section, the Secretary will base her decision on (i) the purpose of the quantification of Priority 3(a) and the reductions and transfers set forth on Exhibit B hereto, and (ii) the implementation of the water transfers by IID as set forth in the schedule in Exhibit B, in addition to the consideration of the factors in 43 C.F.R. § 417.3

c. Notwithstanding any other provision of this Agreement, and in addition to any applicable provisions of the Interim Surplus Guidelines, in the event that either i) the transfers are not carried out as set forth in Exhibit B hereto or additional Colorado River transfers as agreed upon prior to or concurrent with the execution of this Agreement by the Districts are not carried out, or ii) California's Agricultural usage plus 14,500 af of PPR use is above the Benchmark Quantities as set forth in Section 5(C) of the Interim Surplus Guidelines, the provisions of this subparagraph shall apply.

1. For each District that has not implemented the water transfers to which it is a party upon the agreed upon schedule as set forth in Exhibit B hereto, the Inadvertent Overrun and Payback Policy identified in Section 9 below will be immediately suspended. During suspension of the Inadvertent Overrun and Payback Policy, for previously incurred overruns, the payback period shall be as provided in the existing Inadvertent Overrun and Payback Policy were such Policy not suspended. The Inadvertent Overrun and Payback Policy will be reinstated at such time as a District has implemented the water transfers to which it is a party upon the agreed upon schedule as set forth in Exhibit B hereto.

2. Any remaining existing overruns from calendar years 2001 and 2002 by parties to this Agreement must be repaid within a three-year period.

3. In addition to any applicable provisions of the Interim Surplus Guidelines, in the event that the transfers are not implemented in accordance with Column 23 in Exhibit B hereto, MWD shall not place any order to the Secretary for any Colorado River water otherwise available pursuant to sections 2(B)(1) and 2(B)(2) as set forth in the Interim Surplus Guidelines.

4. The Secretary anticipates that a further review of the reasonable and beneficial use of Colorado River water by the Districts will be required pursuant to the annual 43 C.F.R. Pt. 417 reviews that are conducted during the initial term of this Agreement as set forth in Section 6.b. (December 31, 2037). In any such review, the Secretary will base her decision on the factors set forth in Section 8.b.2 above as well as the basis for any District's non-implementation of the transfers set forth in Exhibit B hereto, in addition to the consideration of the factors in 43 C.F.R. § 417.3

9. INADVERTENT OVERRUN AND PAYBACK POLICY

For so long as the provisions of Section 8.b of this Agreement are applied, the Secretary will not materially modify the Inadvertent Overrun and Payback Policy for a 30-year period, absent extraordinary circumstances such as significant Colorado River infrastructure failures, and subject to the provisions of Section 5 of this Agreement. In the event that extraordinary circumstances arise, the Secretary will consult with the Districts and other interested parties before initiating any material change.

10. ADDITIONAL PROVISIONS

a. Imperial Irrigation District v. United States of America, et al., CV 0069W (JFS) (D. Cal. filed January 10, 2003) (JFS), is dismissed pursuant to Stipulation under Fed. R. Civ. P. 41(a)(1). Nothing in this Agreement shall affect the preclusive and non-preclusive effects of the Stipulation during the term of this Agreement and thereafter.

b. Upon dismissal of Imperial Irrigation District v. United States, et al., as provided in subsection 10(a) above, the Secretary will irrevocably terminate the *de novo* "Recommendations and Determinations Authorized by 43 C.F.R. Pt. 417, Imperial Irrigation District" for 2003, and IID's water order for 2003 is approved subject to the terms of this Agreement.

c. 1. IID, CVWD, MWD, and SDCWA do not agree on the nature or scope of rights to the delivery, use or transfer of Colorado River water within the State of California. Furthermore, the Districts and SDCWA agree not to use this Agreement or any provision hereof, as precedence for purposes of evidence, negotiation or agreement on any issue of California or federal law in any administrative, judicial or legislative proceeding, including without limitation,

any attempt by IID and SDCWA to obtain further approval of any water transaction.

2. The terms of this Agreement do not control or apply to the nature or scope of rights to the delivery, use or transfer of Colorado River water within the State of California, except as those rights are defined and addressed in this Agreement during the term hereof.

3. By executing this Agreement, the Districts and SDCWA are not estopped from asserting in any administrative, judicial or legislative proceeding, including those involving the United States, that neither this Agreement nor any of its terms was necessary or required to effectuate the transactions contemplated herein.

4. Nothing herein waives the ability of any party to challenge the exercise of particular miscellaneous and Indian PPRs.

d. This Agreement shall not be deemed to be a new or amended contract for the purpose of Section 203(a) of the Reclamation Reform Act of 1982 (Public Law 97-293, 93 Stat. 1263).

e. This Agreement does not (i) guarantee or assure any water user a firm supply for any specified period, (ii) change or expand existing authorities under applicable federal law, except as specifically provided herein with respect to the Districts, (iii) address interstate distribution of water; (iv) change the apportionments made for use within individual States, (v) affect any right under the California Limitation Act (Act of March 4, 1929; Ch. 16, 48th Sess.), or any other provision of applicable federal law.

f. This Agreement is not intended nor shall it be construed to create any third party beneficiary rights to enforce the terms of this Agreement in any person or entity that is not a party.

g. Each party to this Agreement represents that the person executing this Agreement on behalf of such party has full power and authority to do so, and that his/her signature is legally sufficient to bind the party on whose behalf he/she is signing.

h. This Agreement shall remain in full force and effect according to its terms regardless of whether the Interim Surplus Guidelines are in effect or terminated.

i. This Agreement with the United States is subject to and controlled by the Colorado River Compact of 1922.

UNITED STATES SECRETARY OF THE INTERIOR

Gale A. Norton — Oct. 10, 2003
Gale A. Norton — *Date*

COACHELLA VALLEY WATER DISTRICT
By

10/10/03
General Manager/Chief Engineer — *Date*

IMPERIAL IRRIGATION DISTRICT
By

10-10-03
Date

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
By

10/10/03
Date

SAN DIEGO COUNTY WATER AUTHORITY
By

10-10-03
Date

Exhibit A: Delivery of Priority 3(a) consumptive use entitlement to the Imperial Irrigation District and the Coachella Valley Water District

Imperial Irrigation District

The Secretary of the Interior shall deliver Imperial Irrigation District's Priority 3(a) consumptive use entitlement under this Colorado River Water Delivery Agreement, pursuant to this Exhibit A and Exhibit B hereto as follows:

Delivered to (entity):	At (point of diversion):	Amount not to exceed (af):	Notes
CVWD	Imperial Dam	103,000	---
MWD	Lake Havasu	110,000	1
SDCWA	Lake Havasu	56,200	2
SDCWA	Lake Havasu	200,000	3
SLR	*see note 4*	*see note 4*	4
Misc. & Indian PPRs	Current points of delivery	11,500	5
For benefit of MWD/SDCWA	Lake Havasu	145,000	6
IID	Imperial Dam	Remainder	---
IID's Priority 3(a) Total		3,100,000	---

Notes to Imperial Irrigation District:

1. Agreement for the Implementation of a Water Conservation Program and Use of Conserved Water, dated December 22, 1988; Approval Agreement, dated December 19, 1989. Of amount identified: up to 90,000 af to MWD and 20,000 af to CVWD.
2. Water conserved from the construction of a new lined canal parallel to the All-American Canal from Pilot Knob to Drop 3.
3. Agreement for Transfer of Conserved Water, dated April 29, 1998, as amended. As set forth in Exhibit B, delivery amounts shall be 205,000 AF in calendar year 2021 and 202,500 AF in calendar year 2022.
4. Water conserved from All-American Canal lining project and made available for benefit of San Luis Rey Settlement Parties under applicable provisions of Pub. L. No. 100-675, as amended. Quantity may vary, not to exceed 16,000 afy, as may the point of diversion, subject to the terms of the Allocation Agreement.
5. Water to be delivered to miscellaneous and Indian PPRs identified in the Decree in Arizona v. California, as supplemented. The delivery of water will be to current points of delivery unless modified in accordance with applicable law.
6. As provided in subsection 4(g) of this Agreement.

Coachella Valley Water District

The Secretary of the Interior shall deliver Coachella Valley Water District's Priority 3(a) consumptive use entitlement under this Colorado River Water Delivery Agreement pursuant to this Exhibit A and Exhibit B hereto as follows:

Delivered to (entity):	At (point of diversion):	Amount not to exceed (af):	Notes
SLR	*see note 1*	*see note 1*	1
SDCWA	Lake Havasu	21,500	2
Misc. & Indian PPR	Current points of delivery	3,000	3
CVWD	Imperial Dam	Remainder	---
Coachella Valley Water District's Priority 3(a) Total		330,000	---

Notes:

1. Water conserved from Coachella Canal lining project and made available for benefit of San Luis Rey Settlement Parties under applicable provisions of Pub. L. No. 100-675, as amended. Quantity may vary, not to exceed 16,000 afy, as may the point of diversion, subject to the terms of the Allocation Agreement.
2. Water conserved from lining the unlined portion of the Coachella Canal.
3. Water to be delivered to miscellaneous and Indian PPRs identified in the Decree in Arizona v. California, as supplemented. The delivery of water will be to current points of delivery unless modified in accordance with applicable law.

EXHIBIT B

QUANTIFICATION AND TRANSFERS[1]

In Thousands of Acre-feet

Column:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
			IID Priority 3a											CVWD Priority 3a									
				Reductions											Reductions			Additions					
	Calendar Year	[2]Priority 1, 2 and 3b	IID Priority 3a Quantified Amount	[3]IID Reduction: MWD 1988 Agreement Transfer	IID Reduction: SDCWA Transfer	[4]IID Reduction: AAC Lining IID, SDCWA & SLR	[5,6]IID Reduction: SDCWA Mitigation Transfer	[7]Intra-Priority 3 Transfer IID/CVWD	[8]IID Reduction: MWD Transfer with Salton Sea Restoration	[8]IID Reduction: Conditional ISG Backfill	[9]IID Reduction: Misc. PPRs	IID Reductions: Total Amount *(sum of columns 4 through 11)*	[10]IID Net Consumptive Use Amount *(difference between column 3 and column 12)*	CVWD Priority 3a Quantified Amount	[4]CVWD Reduction: CC Lining, SDCWA & SLR	[9]CVWD Reduction: Misc. PPRs	[11]CVWD Reductions: Total Amount *(sum of columns 15 + 16)*	[7]Intra-Priority 3 Transfer IID/CVWD	[3]Intra-Priority 3 Transfer MWD/CVWD	CVWD Net Consumptive Use Amount *(columns 14 - 17 plus columns 18 + 19)*	Total Priority 1-3 Use Plus PPR Consumptive Use *(sum of columns 2+13+20 plus 11+16)*	[12]ISG Benchmarks	[12]Annual Targets
1	2003	420	3,100	110	10	0	5	0	0	0	11.5	136.5	2,963.5	330	0	3	3	0	20	347	3,745.0	3,740	3,740
2	2004	420	3,100	110	20	0	10	0	0	0	11.5	151.5	2,948.5	330	0	3	3	0	20	347	3,730.0		3,707
3	2005	420	3,100	110	30	0	15	0	0	0	11.5	166.5	2,933.5	330	0	3	3	0	20	347	3,715.0		3,674
4	2006	420	3,100	110	40	0	20	0	0	9	11.5	190.5	2,909.5	330	26	3	29	0	20	321	3,665.0	3,640	3,640
5	2007	420	3,100	110	50	0	25	0	0	0	11.5	196.5	2,903.5	330	26	3	29	0	20	321	3,659.0		3,603
6	2008	420	3,100	110	50	67.7	25	4	20	0	11.5	288.2	2,811.8	330	26	3	29	4	20	325	3,571.3		3,566
7	2009	420	3,100	110	60	67.7	30	8	40	0	11.5	327.2	2,772.8	330	26	3	29	8	20	329	3,536.3	3,530	3,530
8	2010	420	3,100	110	70	67.7	35	12	60	0	11.5	366.2	2,733.8	330	26	3	29	12	20	333	3,501.3		3,510
9	2011	420	3,100	110	80	67.7	40	16	80	0	11.5	405.2	2,694.8	330	26	3	29	16	20	337	3,466.3		3,490
10	2012	420	3,100	110	90	67.7	45	21	100	0	11.5	445.2	2,654.8	330	26	3	29	21	20	342	3,431.3	3,470	3,470
11	2013	420	3,100	110	100	67.7	70	26	100	0	11.5	485.2	2,614.8	330	26	3	29	26	20	347	3,396.3		3,462
12	2014	420	3,100	110	100	67.7	90	31	100	0	11.5	510.2	2,589.8	330	26	3	29	31	20	352	3,376.3		3,455
13	2015	420	3,100	110	100	67.7	110	36	100	0	11.5	535.2	2,564.8	330	26	3	29	36	20	357	3,356.3		3,448
14	2016	420	3,100	110	100	67.7	130	41	100	0	11.5	560.2	2,539.8	330	26	3	29	41	20	362	3,336.3		3,440
15	2017	420	3,100	110	100	67.7	150	45	91	0	11.5	575.2	2,524.8	330	26	3	29	45	20	366	3,325.3		
16	2018	420	3,100	110	130	67.7	0	63	0	0	11.5	382.2	2,717.8	330	26	3	29	63	20	384	3,536.3		
17	2019	420	3,100	110	160	67.7	0	68	0	0	11.5	417.2	2,682.8	330	26	3	29	68	20	389	3,506.3		
18	2020	420	3,100	110	193	67.7	0	73	0	0	11.5	454.7	2,645.3	330	26	3	29	73	20	394	3,473.8		
19	2021	420	3,100	110	205	67.7	0	78	0	0	11.5	472.2	2,627.8	330	26	3	29	78	20	399	3,461.3		
20	2022	420	3,100	110	203	67.7	0	83	0	0	11.5	474.7	2,625.3	330	26	3	29	83	20	404	3,463.8		
21	2023	420	3,100	110	200	67.7	0	88	0	0	11.5	477.2	2,622.8	330	26	3	29	88	20	409	3,466.3		
22	2024	420	3,100	110	200	67.7	0	93	0	0	11.5	482.2	2,617.8	330	26	3	29	93	20	414	3,466.3		
23	2025	420	3,100	110	200	67.7	0	98	0	0	11.5	487.2	2,612.8	330	26	3	29	98	20	419	3,466.3		
24	2026	420	3,100	110	200	67.7	0	103	0	0	11.5	492.2	2,607.8	330	26	3	29	103	20	424	3,466.3		
25	2027	420	3,100	110	200	67.7	0	103	0	0	11.5	492.2	2,607.8	330	26	3	29	103	20	424	3,466.3		
26	2028	420	3,100	110	200	67.7	0	103	0	0	11.5	492.2	2,607.8	330	26	3	29	103	20	424	3,466.3		
	2029-2037	420	3,100	110	200	67.7	0	103	0	0	11.5	492.2	2,607.8	330	26	3	29	103	20	424	3,466.3		
	2038-2047[13]	420	3,100	110	200	67.7	0	103	0	0	11.5	492.2	2,607.8	330	26	3	29	103	20	424	3,466.3		
	2048-2077[14]	420	3,100	110	200	67.7	0	100	0	0	11.5	489.2	2,610.8	330	26	3	29	100	20	421	3,466.3		

1 Exhibit B is independent of increases and reductions as allowed under the Inadvertent Overrun and Payback Policy.

2 Any higher use covered by MWD, any lesser use will produce water for MWD and help satisfy ISG Benchmarks and Annual Targets.

3 IID/MWD 1988 Conservation Program conserves up to 110,000 AFY and the amount is based upon periodic verification. Of amount conserved, up to 20,000 AFY to CVWD (column 19), which does not count toward ISG Benchmarks and Annual Targets, and remainder to MWD.

4 Ramp-up amounts may vary based upon construction progress, and final amounts will be determined by the Secretary pursuant to the Allocation Agreement.

5 Any amount identified in Exhibit B for mitigation purposes will only be from non-Colorado River sources and these amounts may be provided by exchange for Colorado River water.

6 Water would be transferred to MWD subject to satisfaction of certain conditions and to appropriate federal approvals. For informational purposes only, these transfers may also be subject to state approvals. Schedules are subject to adjustments with mutual consent. After 2006, these quantities will count toward the ISG Benchmarks (column 22) and Annual Targets (column 23) only if and to the extent that water is transferred into the Colorado River Aqueduct for use by MWD and/or SDCWA.

7 MWD can acquire if CVWD declines the water. Any water obtained by MWD will be counted as additional agricultural reduction to help satisfy the ISG Benchmarks and Annual Targets. MWD will provide CVWD 50,000 AFY of the 100,000 AFY starting in year 46.

8 IID has agreed to provide transfer amounts to meet the minimum ISG benchmarks, not to exceed a cumulative total of 145,000 AF. Maximum transfer amounts are 25,000 AF in 2006, 50,000 AF plus the unused amount from 2006 in 2009, and 70,000 AF plus the unused amounts from 2006 and 2009 in 2012. In addition to the maximum transfer amounts IID has also committed that no more than 72,500 AF of reduced inflow to the Salton Sea would result from these additional transfers.

9 Up to the amount shown, as agreed upon reduction to IID or CVWD to cover collectively the sum of individual Miscellaneous PPRs, federal reserved rights and decreed rights. This is a reduction that counts towards ISG Benchmarks and Annual Targets.

10 For purposes of Subparagraph 8(b)(2)(i) and (ii) and 8(c)(1) and (4) the Secretary will take into account: (i) the satisfaction of necessary conditions to certain transfers (columns 7 and 9) not within IID's control: (ii) the amounts of conserved water as determined, where such amounts may vary (columns 4, 6, 9 and 10); and (iii) with respect to column 7, reductions by IID will be considered in determining IID's compliance regardless of whether the conserved water is diverted into the Colorado River Aqueduct.

11 For purposes of Subparagraph 8(c)(1) and (4) the Secretary will take into account: (i) the satisfaction of necessary conditions to certain transfers (columns 15 and 16) not within CVWD's control; and (ii) the amounts of conserved water as determined, where such amounts may vary (column 15).

12 All-consumptive use of priorities 1 through 3 plus 14,500 AF of PPRs must be within 25,000 AF of the amount stated.

13 Assumes SDCWA does not elect termination in year 35.

14 Assumes SDCWA and IID mutually consent to renewal term of 30 years.

Notes:

Substitute transfers can be made provided the total volume of water to be transferred remains equal or greater than amounts shown consistent with applicable federal approvals.

The shaded columns represent amounts of water that may vary.

Exhibit C: Payback Schedule of Overruns for Calendar Years 2001 and 2002

Year	*IID*	*CVWD*	*MWD*	*Total*
2004	18,900	9,100	11,000	39,000
2005	18,900	9,100	11,000	39,000
2006	18,900	9,100	11,100	39,100
2007	18,900	9,100	11,100	39,100
2008	18,900	9,200	11,100	39,200
2009	18,900	9,200	11,100	39,200
2010	19,000	9,200	11,100	39,300
2011	19,000	9,200	11,100	39,300
Cumulative	151,400	73,200	88,600	313,200

Note: Each district may, at its own discretion, elect to accelerate paybacks to retire its payback obligation before the end of the eight-year period ending in calendar year 2011. Each district's payback obligation is subject to acceleration in anticipation of a shortage in the Lower Colorado River Basin as provided for in section 8(b).

APPENDIX G

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