2020 URBAN WATER MANAGEMENT PLAN

FINAL DRAFT

MAY 2021

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City of El Centro

FINAL DRAFT

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ACRONYMS AND ABBREVIATIONS

20x2020	20% water use reduction in GPCD by year 2020
AAC	All-American Canal
AB	Assembly Bill
Act	Urban Water Management Planning Act
AF	Acre-Feet
AFY	Acre-Feet per Year
AMI	Area Median Income (Same as HMI)
AMI/AMR	Advanced Metering Infrastructure or Automatic Meter Reading
AOP	Annual Operating Plan
AWSDA	Annual Water Supply and Demand Assessment
AWWA	American Water Works Association
BiOps	Biological Opinions
BMP	Best Management Practice
CalARP	California Accidental Release Program
CAP	Central Arizona Project
CCF	Hundred Cubic Feet
CDCR	California Department of Corrections and Rehabilitation Facilities
CEC	Constituents of Emerging Concern or California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Information System
City	City of El Centro
CRA	Colorado River Aqueduct
CRWDA	Colorado River Water Delivery Agreement
CVP	Central Valley Project
CVWD	Coachella Valley Water District
CWC	California Water Code
DDW	Division of Drinking Water
Delta	Sacramento-San Joaquin River Delta
DMM	Demand Management Measure
DOE	Department of Energy
DOF	Department of Finance
DRA	Drought Risk Assessment
DU	Dwelling Unit
DWR	Department of Water Resources
EDP	Equitable Distribution Plan

EIR	Environmental Impact Report
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ET	Evapotranspiration
Eto	Evapotranspiration from a Standardized Grass Surface
Etr	Evapotranspiration from a Standardized Alfalfa Surface
FWS	US Fish and Wildlife Service
FY	Fiscal Year
GAC	Granulated Activated Carbon
GCM	Global Climate Model
GDD	Growing Degree Day
GPCD	Gallons per Capita per Day
GPD	Gallons per Day
GPF	Gallons per Flush
GPM	Gallons per Minute
HCF	Hundred Cubic Feet
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
HMI	Household Median Income (Same as AMI)
ICS	Intentionally Created Surplus
IID	Imperial Irrigation District
In	Inches
IOPP	Inadvertent Overrun Payback Policy
IRP	Integrated Water Resources Plan
IRWMP	Integrated Regional Water Management Plan
ITP	Independent Technical Panel
IWA	International Water Association
IWSP	Improved Water and Wastewater Services Program
KAF	Thousand Acre Feet
KAFY	Thousand Acre Feet per Year
LAFCO	Local Agency Formation Commission
LCR	Lower Colorado River
LRP	Local Resources Program
LTFP	Long-Term Facilities Plan
MAF	Million Acre-Feet
MAFY	Million Acre-Feet per Year
MCL	Maximum Contaminant Level
MCI	Municipal, Commercial and Industrial
Metropolitan	Metropolitan Water District of Southern California

MG	Million Gallon
MGD	Million Gallons per Day
Mg/L	Milligrams per Liter
MHMP	Multi-Jurisdictional Hazard Mitigation Plan
MIN	Minutes
M&I	Municipal and Industrial
MHI	Median Household Income
MOU	Memorandum of Understanding
MSCP	Multi-Species Conservation Program
MSL	Mean Sea Level
MTBE	Methyl Tertiary Butyl Ether
MWD/MWDSC	Metropolitan Water District of Southern California
NA	Not Available
NBGPP	North Basin Groundwater Protection Project
NDMA	N-nitrosodimethylamine
NEPA	National Environmental Policy Act
NF	Nanofiltration
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OES	California Office of Emergency Services
PCE	Perchloroethylene
pci/L	Picocuries per Liter
PPCP	Pharmaceuticals and Personal Care Product
PPR	Present Perfected Rights
QSA	Quantification Settlement Agreement
REOC	Regional Emergency Operations Center
RHNA	Regional Housing Needs Assessment
RO	Reverse Osmosis
RTP	Regional Transportation Plan
RUWMP	Regional Urban Water Management Plan
RWQCB	Regional Water Quality Control Board
SAP	Service Area Plan
SB	Senate Bill
SBx7-7	Senate Bill 7 as part of the Seventh Extraordinary Session
SCADA	Supervisory Control and Data Acquisition
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
SDI	Supply & Demand Imbalance
SDCWA	San Diego County Water Authority
SDWA	Safe Drinking Water Act

SOI	Sphere of Influence
Study	Colorado River Basin Water Supply and Demand Study
SWP	State Water Project
SWRCB	California State Water Resources Control Board
TAF	Thousand Acre-Feet
TDS	Total Dissolved Solids
ug/L	Micrograms per Liter
USBR	United States Bureau of Reclamation
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UV	Ultraviolet
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compound
WAPA	Western Area Power Administration
WARN	Water Agencies Response Network
WBIC	Weather-Based Irrigation Controller
WCAB	Water Conservation Advisory Board (of IID)
WRCC	Western Regional Climate Center
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan
WTP	Water Treatment Plant
WUE	Water Use Efficiency
WWTP	Wastewater Treatment Plant

1 INTRODUCTION

1.1 Urban Water Management Plan Requirements

This report has been prepared in compliance with the Urban Water Management Planning Act (Act), which was added to the California Water Code by Statute 1983, Chapter 1009, and became effective on January 1, 1984. This Act requires that "every urban water supplier shall prepare and adopt an urban water management plan." An "urban water supplier" is defined as a supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.

These plans must be filed with the California Department of Water Resources (DWR) every five years ending in 0 and 5. The 2020 UWMP is due to DWR by July 1, 2021. The Act's requirements include:

- Detailed evaluation of the supplies necessary to meet demands over at least a 20-year period, in five-year increments, under normal conditions, single dry-year conditions, and five consecutive dry years.
- Documentation of the stages of actions an urban water supplier would undertake to address up to a 50 percent reduction in its water supplies.
- Description of the actions to be undertaken in the event of a catastrophic interruption in water supplies; and
- Evaluation of reasonable and practical efficient water uses, recycling, and conservation activities.

This 2020 Urban Water Management Plan (UWMP) provides a detailed summary of present and future water supplies and demands and provides an assessment of the City of El Centro's (City) water resource needs. Specifically, the UWMP provides water supply planning for a 25-year planning period in five-year increments and identifies water supplies needed to meet existing and future demands. The demand analysis must identify supply reliability under three hydrologic conditions: a normal year, single dry-year, and five consecutive dry-years. The City's 2020 UWMP updates the 2015 UWMP, in compliance with new requirements of the Act.

1.1.1 New Requirements Since 2015

There are numerous additional requirements passed by the Legislature for the 2020 UWMP, updating the 2015 UWMP guidance. The following is a summary of the significant changes:

- Five Consecutive Dry-Year Water Reliability Assessment – The dry-year water reliability planning was modified from a "multi-year" time period to a "drought lasting five consecutive water years." The Supplier must analyze the reliability of water supplies to meet demands over an extended drought period.
- Drought Risk Assessment – The Legislature created a new UWMP requirement for drought planning that requires the Supplier to assess water supply reliability over the five-year period from 2021 to 2025 that evaluates water supplies, water use, and the resulting water supply reliability under a reasonable prediction for five consecutive dry years.

- Seismic Risk – The Water Code now requires Suppliers to specifically address the seismic risk to water facilities and to have a mitigation plan.
- Water Shortage Contingency Plan – The Legislature modified the UWMP laws in 2018 to require a Water Shortage Contingency Plan (WSCP) with specific elements. The WSCP provides an action plan for a drought or catastrophic water supply shortage.
- Groundwater Supplies Coordination – The Legislature enacted the Sustainable Groundwater Management Act in 2014 to address groundwater conditions throughout California. The Water Code requires that the 2020 UWMP is consistent with any applicable Groundwater Sustainability Plans that have been completed.
- Lay Description – The Legislature included a new statutory requirement for Suppliers to include a lay description of the fundamental determinations of the UWMP. The description will include water service reliability, future challenges, and strategies for managing reliability risks. The section will provide a synopsis of the Supplier's detailed analysis.
- Reduced Reliance on Delta – Suppliers that anticipate participating in, or receiving water from, a proposed project in the Sacramento-San Joaquin Delta (Delta) have the opportunity to demonstrate reduced reliance on the Delta, consistent with Delta Plan policy.
- Energy Intensity – Suppliers must provide information by water service operation to calculate the energy intensity of their water service. This is now required, whereas in the 2015 UWMP it was voluntary.

1.1.2 Senate Bill 7 of the Seventh Extraordinary Session of 2009, Water Conservation in the Delta Legislative Package

The state Legislature passed Senate Bill 7 as part of the Seventh Extraordinary Session, referred to as SBx7-7, on November 10, 2009, which became effective February 3, 2010. This law was the water conservation component to the historic Delta legislative package and sought to achieve a 20 percent statewide reduction in urban per capita water use in California by December 31, 2020. The law requires each urban retail water supplier to develop urban water use targets to help meet the 20 percent goal by 2020.

The bill states that the legislative intent is to require all water suppliers to increase the efficiency of use of water resources and to establish a framework to meet the state targets for urban water conservation called for by the Governor. The bill is intended to promote urban water conservation initiatives, while establishing methods for urban retail water suppliers to determine targets to help achieve increased water use efficiency by the year 2020.

The 2020 UWMP shows the 2020 per-capita target value that was adopted in the 2015 UWMP, and the compliance value based upon actual 2020 customer water use.

1.1.3 Assembly Bill 1668 and Senate Bill 606

In 2018, Governor Brown signed into law the water conservation bills AB 1668 and SB 606. These bills were a result of an Executive Order from the Governor during the recent drought which required State agencies to develop and recommend a long-term water conservation framework to ensure adequate water

supplies for the State now and in the future. The two bills establish guidelines for efficient water use and a framework for implementation and oversight of the new standards, which must be in place by 2022. Provisions of the bills promote long term water conservation and drought reliability and include the following:

1 Establishes water use objectives and long-term standards for efficient water use that apply to urban retail water suppliers comprised of indoor and outdoor residential water use, dedicated irrigation meters for commercial, industrial, and institutional (CII) users, and water loss.

2 Provides incentives for water suppliers to recycle water; and

3 Requires suppliers to set annual water budgets and prepare for drought.

1.2 Lay Description

A new DWR requirement for all 2020 UWMPs is that each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. The Final DWR 2020 UWMP Guidebook specifically states, *"The lay description can be treated like an Executive Summary of the UWMP, written in clear eighth grade language that summarizes the key information regarding water supplies, water demands, water service reliability (including catastrophic potential) and Drought Risk Assessment."* The City's Lay Description is presented below:

1.2.1 Chapter 1: Introduction

On November 10, 2009, the state Legislature passed Senate Bill 7 now known as SBx7-7. That goal of that law, which took effect on February 3, 2010, was to reduce the average amount of water each California resident uses on a daily basis. The target date for meeting that reduction was December 31, 2020. Executive Orders issued by California's Governor, as well additional legislation stemming from the recent drought required improved efficiency in both indoor and outdoor water use, provided water agencies with incentives to recycle water and required water suppliers to prepare for future droughts. The City of El Centro's 2020 UWMP provides a detailed summary of its present and future water supplies and demands and assesses its water resource needs over the next 25 years.

1.2.2 Chapter 2: Plan Preparation

The California Water Code requires all "urban water suppliers" to prepare and submit an Urban Water Management Plan (UWMP) to the Department of Water Resources (DWR) every five years (in years ending in "00" or "05" or by specific dates specified by the State. The Water Code defines an urban water supplier as a public or private water agency, which provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplies more than 3,000 acre-feet (AF) of water annually (an acre-foot is a volume of water equal to one acre covered to a depth of one foot, which is approximately 325,851 gallons). The City of El Centro is a public water supplier, which meets the definition of an urban water supplier. The City has 10,458 municipal water service connections and supplied 7,580 AF of water to its customers in 2020.

1.2.3 Chapter 3: System Description

The City of El Centro, which is located approximately 120 miles east of San Diego along the I-8 corridor, is situated in an arid region where annual rainfall averages 2.64 inches. El Centro is the largest City and the principal trading center of Imperial County and had a population of 45,657 on January 1, 2020, which is projected to increase by 28.7% to 58,753 by 2045. The City purchases all its water from the Imperial Irrigation District (IID), which delivers raw Colorado River water to all agricultural lands and urban water retailers within its water service area including the City of El Centro. Raw water purchased from IID is stored in four 12.5 Million Gallon (MG) open reservoirs at the City's water treatment plant. After the raw water is treated to drinking water standards, it is stored in three tanks at the treatment plant, which have a combined capacity of 10.0 MG, and in one 4.0 MG tank located approximately two miles away. The treated drinking water is pumped from these tanks into the distribution system, which includes approximately 148 miles of pipeline ranging in size from ¾ inches to 30-inches in diameter.

1.2.4 Chapter 4: System Water Use Characterization

This chapter presents the City's current water demands by customer type and projects future water demand over the next 25 years. Approximately 72 percent of all water usage in the City is residential use, with just over half that being used by lower income residents. The remaining 28 percent is used by businesses, industries, landscape irrigation, schools, and government offices. Over the past six years, City water losses have averaged 6.4%. Those losses consist of: (1) unbilled but authorized uses such as fire hydrant flushing and firefighting; (2) real losses incurred through leakage in mains and service lines; and (3) unauthorized uses and customer metering inaccuracies. Total water used over the past five years increased 6.5%. Based on current population projections, and taking into account future water conservation, total water usage in El Centro is expected to increase by 21% over the next 25 years (compared with a 28.7% projected increase in population over the same period).

1.2.5 Chapter 5: SBx7-7 Baselines and Targets

To comply with SBx7-7, the City had to determine its baseline water use and set targets for the years 2015 and 2020 to meet the State's 20% and 15% reduction goals for 2020 and 2015, respectively. The City met the first 2015 goal, which was an early indication it was on track to meet its 2020 goal as well. The State allows water suppliers to establish their target goals based on one of four methods. El Centro chose to set its goal based on using a regional hydrologic target set forth in the State's 20x2020 Water Conservation Plan (Method 3). Using Method 3, the City's target goal was set at 198.6 gallons per person per day. The City's actual water use in 2020 was 148 gallons per person per day, which represents a 25,5% reduction over its baseline target, thus demonstrating compliance with the State's 20% reduction requirement.

1.2.6 Chapter 6: Water Sources and Supply Reliability

As the result of multiple agreements, State and Federal laws, and numerous court decisions extending all the way to the US Supreme Court, some of which date back to 1885, IID has the legal rights to take up to 3.1 Million Acre-Feet (MAF) from the Colorado River in most years with a guarantee of at least 2.6 MAF. Taken together, these legal documents and court rulings are known collectively as the "Law of the River." These legal rights are important, given the Colorado river is in the midst of a long-term drought brought on by the impacts of climate change, as demonstrated by historically low storage volumes and water surface

elevations in both Lakes Mead and Powell in recent years. IID's legal rights to a significant portion of Colorado River water is particularly important to El Centro and other Imperial Valley communities, given the poor quality of regional groundwater and the lack of recycled water (which is not economically justifiable).

1.2.7 Chapter 7: Water Service Reliability and Drought Risk Assessment

The State requires all urban water supplier to determine the reliability of its ability to provide water service under normal, dry, and multiple dry water years. To make this determination, the City reviewed rainfall records and compared them with water usage over the past several decades. The average or normal year during this period was 2008 when annual rainfall of 2.60 inches was closest to the long-term historic average of 2.64 inches dating back to 1932. The single driest year was 2006, which had the lowest amount of annual rainfall – 0.42 inches – over the past several decades. The five-multiple year dry period, and the only five consecutive years over the past several decades where rainfall was below average for each of those years was 1998-2002 when total rainfall measured 5.66 inches. Based on water usage (as a percentage of average use) during these years, the City was able to project future use during normal, single dry and multiple dry years. Because of the extreme reliability of IID's Colorado River water rights under the "Law of the River," El Centro will have a sufficient supply of water to meet all future needs through 2045 during single and multiple dry years. The State also requires every urban water supplier to include a Drought Risk Assessment (DRA) in their UWMP. This analysis assumes five consecutive years of drought will occur beginning in 2021 and continuing through 2025. Again, due to the highly reliable nature of IID's water source, the City will be able to meet all its projected demands through 2025, assuming 2021 is the first year of a five year drought.

1.2.8 Chapter 8: Water Shortage Contingency Plan

The California Water Code requires suppliers to prepare and adopt a Water Shortage Contingency Plan (WSCP) which incorporates appropriate stages of response actions to be implemented during extended periods of water shortages. The Water Code sets six standard stages of water shortages (ranging from a 10% shortage to a greater than 50% shortage) but allows water suppliers to differ from that provided they cross-reference their stages to the State's six standard stages. The City established five water conservation stages (shortages of 10%, 20%, 30%, 40% and 50% or greater) in Ordinance No. 17-01 adopted on February 21, 2017. These stages, which have since been incorporated into the El Centro Municipal Code, are declared by the City Council and require the implementation of an increasing number of water use restrictions and prohibitions, depending on the stage. Violations of the restrictions and/or prohibitions can result in penalties ranging from $100 to $500 per violation. Water rates will also be increased by 25%, 50% and 100% percent upon the declaration of a Stage 3, 4 or 5 emergency, respectively. The City's 2020 WSCP was adopted by Resolution No. 21-XX, along with its UWMP on June 15, 2021.

1.2.9 Chapter 9: Demand Management Measures

This UWMP addresses Demand Management Measures (DMM), which are measures the City can take to promote water conservation practices. The City's DMMs include adopting City water waste ordinances, metering all water usage in the City, conservation pricing, instituting programs to manage water system losses in the distribution system, assigning City staff to coordinate water conservation efforts, and participating in public education and outreach activities, which include offering rebates, distributing water

conservation information in customer bills, publishing press releases, newsletters, newspaper articles, posting information on the City's website, utilizing social media to promote water conservation, participating in school education programs, and staffing booths at public fairs and other similar events. This Plan also provides information on various water conservation programs implemented by IID, El Centro's wholesale supplier, which include equitably apportioning water when necessary, fallowing (temporarily taking agricultural land out of production) and implementing miscellaneous conservation programs including lining the All-American Canal and coordinating water conservation efforts closely with other regional suppliers.

1.2.10 Chapter 10 Plan Adoption, Submittal, and Implementation

A public hearing was held in the City of El Centro Council Chambers on June 15, 2021 at 7:00 p.m. At the conclusion of that public hearing, the City Council adopted the 2020 UWMP along with the WSCP by Resolution No. 21-XX. Imperial County and Imperial Irrigation District were notified of the preparation of the UWMP and of the date of the public hearing by letter dated April 12, 2021. Notification of the public hearing was also provided to the public via two separate notices published in the Imperial Valley Press on May 25, 2021 and June 1, 2021. A copy of the Final Draft of El Centro's 2020 UWMP was also posted on the City's website on May ___, 2021. Copies of the Final adopted 2020 UWMP, including its accompanying WSCP, will be submitted electronically to DWR through the WUE Data Portal prior to July 1, 2021. Additionally, a CD containing a digital copy of the 2020 UWMP and WSCP will be submitted to the California State Library, Imperial County, and the Imperial Irrigation District within 30 days of the date of adoption. The 2020 UWMP and WSCP will also be posted on the City's website and made available to the public within 30 days of the date of adoption. And lastly, any amendments to this adopted UWMP and/or WSCP, will follow each of the steps for notification, public hearing, adoption, and submittal referenced in this paragraph.

2 PLAN PREPARATION

2.1 Basis for Preparing a Plan

Per California Water Code (CWC), "urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems. Every urban water supplier must adopt an urban water management plan within one year after it has become an urban water supplier.

The City of El Centro is a public water supplier that meets the definition of an urban water supplier with 10,458 municipal water service connections and a total 7,580 acre-feet (AF) of water supplied to customers in their water service area in 2020. See Table 2-1.

Table 2-1: Public Water Systems

Table 2-1: Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020[1]	Volume of Water Supplied 2020 (AF)[2]
CA1310004	City of El Centro	10,458	7,580
	TOTAL	10,458	7,580

2.2 Individual or Regional Planning and Compliance

The City of El Centro has developed an individual UWMP (as opposed to a Regional UWMP) that reports solely on its service area; addresses all requirements of the CWC; and notifies and coordinates with appropriate regional agencies and constituents. See Table 2-2.

[1] Municipal connections include active, inactive, and temporary service connections.
[2] Volume of water supplied includes water entering the potable water system (for El Centro, that includes only treated imported water).

Table 2-2: Plan Identification

Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance**
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☐	Water Supplier is also a member of a Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		

A retail supplier may choose to meet the SBx7-7 targets on its own or it may form a regional alliance with other retail suppliers to meet the water use target as a region. Within a Regional Alliance, each retail water supplier will have an additional opportunity to achieve compliance under both an individual target and a regional target. The City is not a member of a regional alliance and will report individual compliance with SBx7-7 targets.

2.3 Fiscal or Calendar Year and Units of Measure

The City of El Centro is a water retailer (as opposed to a water wholesaler). The City's 2020 UWMP has been prepared using calendar years (as opposed to fiscal years) and has been prepared using acre-feet (AF) as the units of water volume measure. See Table 2-3.

Table 2-3: Supplier Identification

Table 2-3: Supplier Identification	
Type of Agency	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
Units of Measure Used in UWMP	
Unit	AF

2.4 Coordination and Outreach

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

The City of El Centro has worked closely with Imperial Irrigation District (IID), the City's water wholesaler, in estimating projected water use in accordance with CWC and has relied upon water supply information provided by IID in fulfilling its 2020 UWMP. See Table 2-4.

Table 2-4: Water Supplier Information Exchange

Table 2-4: Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Imperial Irrigation District

The intent of the 2020 UWMP is to focus on specific issues unique to the City's water service area. While some regional UWMP issues are introduced in this Plan, more detailed regional information is presented in IID's 2012 Integrated Regional Water Management Plan.

The City's water supply planning relates to the policies, rules, and regulations of its regional and local water providers. Recognizing that close coordination among other relevant public agencies is key to the success of its UWMP, the City worked closely with other entities to develop and update this planning document.

The City is dependent on imported water from IID, its regional wholesaler.

The City encouraged community and public interest involvement in the plan update through a public hearing and inspection of the draft document. The public hearing was conducted on June 15, 2021. Public hearing notifications were published in local newspapers, both two weeks and three weeks prior to the public hearing. A copy of the published Notice of Public Hearing is included in Appendix D. The notice was also posted on the City's website, along with a draft copy of the UWMP, three weeks prior to the public hearing. The hearing provided an opportunity for all residents and employees in the City's water service area to learn and ask questions about their water supply in addition to the City's plans for providing a reliable, safe, high-quality water supply.

To assist City staff in preparation of their 2020 UWMP, Psomas staff attended numerous UWMP Training Webinar Workshops facilitated by DWR. Psomas also coordinated with the City Community Development Department staff to gather information on current and projected land use, including new near-term development which could impact water demands within the next five years.

Table 2-4A lists the entities the City or Psomas staff coordinated with in the development of the City's 2020 UWMP. Information from IID's 2012 IRWMP, IID's 2021 Water Supply Assessment (WSA) Template document, and the *"Urban Water Management Plan Guidebook 2020"* prepared by DWR were utilized in preparing the City's 2020 UWMP. The City's water supply planning considers the programs of local and regional water agencies.

The 2020 UWMP is intended to serve as a general, flexible, and open-ended document that is updated every five years (or more often if necessary) to reflect changes in the City's water supply trends, and conservation and water use efficiency policies. The 2020 UWMP will be used by City staff to guide the water use and management efforts through the year 2025, when the 2020 UWMP will require an update.

Table 2-4 A: City of El Centro Coordination and Public Involvement

Table 2-4 A: City of El Centro Coordination and Public Involvement					
	Participated In Plan Preparation	Contacted for Assistance	Commented on Draft	Notified of Public Hearing	Attended Public Hearing
City Water Division	X	X	X	X	X
City Public Works Department		X	X	X	X
City Engineering Division		X	X	X	X
City Planning & Zoning Division		X	X	X	X
City Community Development Department		X	X	X	X
City Manager's Office				X	X
El Centro City Council				X	X
IID		X		X	
Imperial County				X	
Interested General Public				X	X

Note: This Table will be updated prior to issuance of the Final 2020 UWMP to reflect final coordination efforts.

3 SYSTEM DESCRIPTION

Water demands within the City's service area are dependent on many factors such as local climate conditions, population, demographics, land use, and economics. This chapter describes the City's service area and the characteristics which relate to water demand.

3.1 General Description

3.1.1 2012 Imperial Region Integrated Regional Water Management Plan and IID's 2021 Water Supply Template

A primary resource for the preparation of the City of El Centro's 2015 UWMP was the 2012 Imperial Integrated Regional Water Management Plan (Imperial IRWMP or IRWMP) prepared by Imperial County (County) and the Imperial Irrigation District (IID), with participation from other Water Forum members including the City of El Centro. While the IRWMP has not been updated since 2012, IID updates much of the information and water-related projections contained in the 2012 document, primarily for developer use in preparing Water Supply Assessments (WSA). IID has provided the City of El Centro with the latest January 2021 update of their WSA baseline template for use in preparing the City's 2020 UWMP.

While IID's January 2021 WSA Template contains updated water demand and supply data, the 2012 IRWMP continues to be an important reference document for use in preparing the City's 2020 UWMP. This is because the IRWMP defines a portfolio of cost-effective water management strategies that support economic development and provide a reliable water supply for new municipal, commercial, and industrial (MCI) demands without impacting historical MCI and agricultural uses of water or impacting existing agreements or contracts. The IRWMP is to guide action on resource management strategies and projects to be implemented by participating agencies and stakeholder groups to assist in meeting the Region's water management goals and objectives.

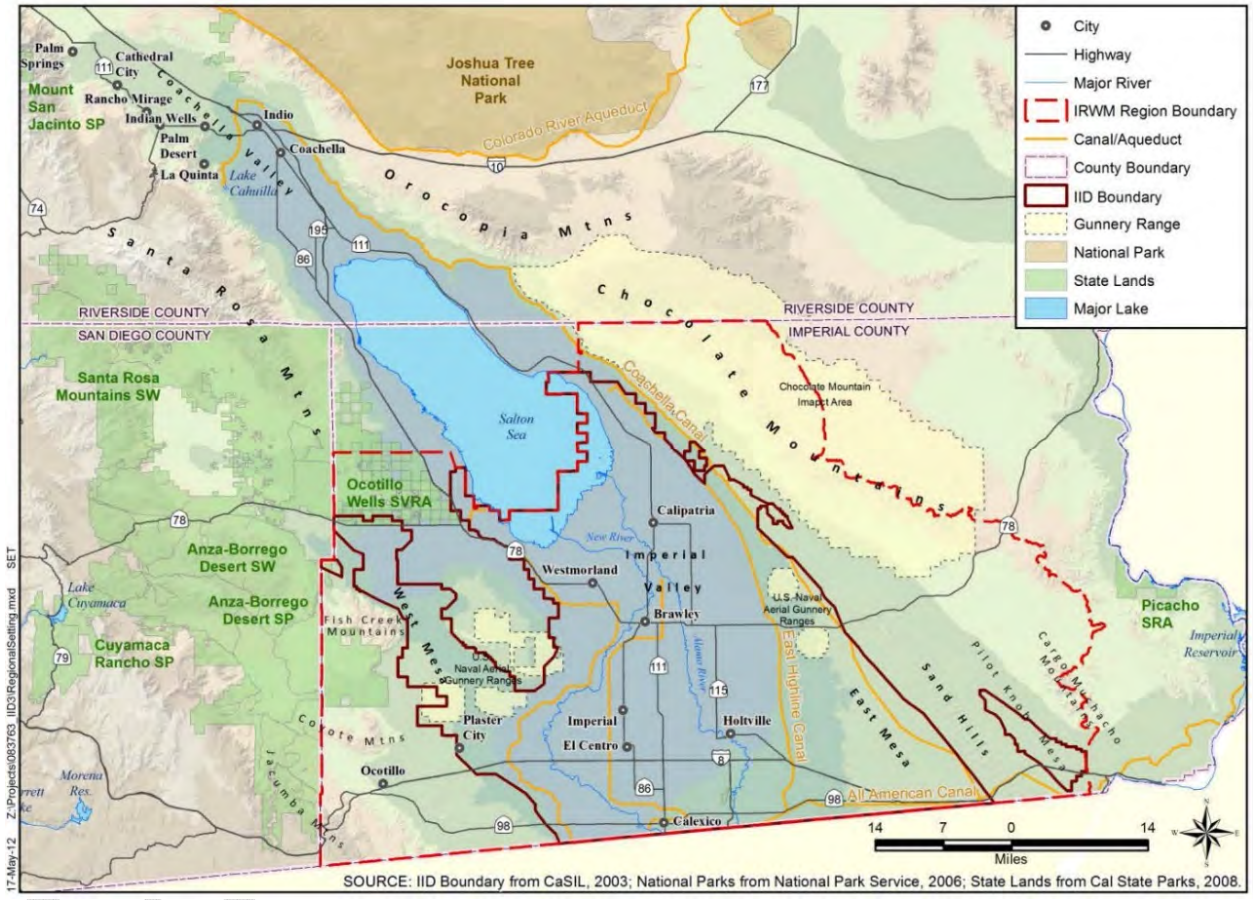
The IRWMP together with IID January 2021 WSA Baseline Template are resources the Imperial Region can use to define the region's long-term needs and priorities for water infrastructure, while matching those needs with available state and federal funding. In the near-term, the purpose of the IRWMP is to ensure the Imperial Region qualifies for funding available from the State of California by meeting IRWMP standards by the State Legislature and managed by DWR.

The Imperial IRWMP regional setting is defined by the boundary set forth as the "Imperial Region". The Imperial Region is located in the southeast corner of Imperial County – bordered to the east by the crest of the Chocolate Mountains (which lie west of the Colorado River), to the west by San Diego County, to the north by the Coachella Valley IRWM boundary, the Salton Sea and Riverside County, and to the south by the U.S./Mexico international border. Figure 3-1 shows the location of the Imperial Region. The Imperial Region boundaries were selected for the following reasons:

- Imperial Water Forum members have experience working together to address complex issues, so they were well-equipped to develop an IRWMP.
- Primary conflicts within the region related to new water demands and future land use changes are intensified by issues surrounding the cap on Colorado River supplies, the approach to apportioning water supplies, and competing uses within the Imperial Valley.

- Urban and rural development of the Imperial Valley tie together IID, the County, and the region's Cities to better integrate land use and water supply plans and the planning process.
- The Imperial Region presents opportunities for recycled and reclaimed water use because of the geographic proximity of its users.
- The Imperial Region has opportunities to help the state meet its renewable energy goals by developing geothermal and solar generating facilities.

Figure 3-1: Imperial IRWMP Regional Setting: Imperial Region



The area, having annual average rainfall of less than three inches a year, relies almost exclusively on imported Colorado River water. Groundwater development has occurred to a very limited degree in areas outside of the IID water service area. The Coachella Valley is to the north and the Mexicali Valley (Baja California, Mexico) to the south, while the Imperial Valley is central to the Imperial Region, all three of which lie within the Salton Sea watershed. The Region, which abuts the Coachella Valley IRWM and Anza Borrego IRWM regions and is nestled among surrounding mountain ranges, lies entirely within the state's Colorado River Hydrologic Region. The major population centers are located along California State Route (SR) 86 and SR 111 in the Imperial Valley.

IID holds the water rights to and is responsible for delivering untreated Colorado River water to users in its service area. The County is responsible for land use planning in the unincorporated areas of Imperial County and for groundwater management. The IID and County boundaries are shown on Figure 3-1.

The area selected for the Imperial Region lies completely within DWR's Colorado River Hydrologic Region. It is also entirely within the State Water Resources Control Board Region 7, Colorado River Basin Region.

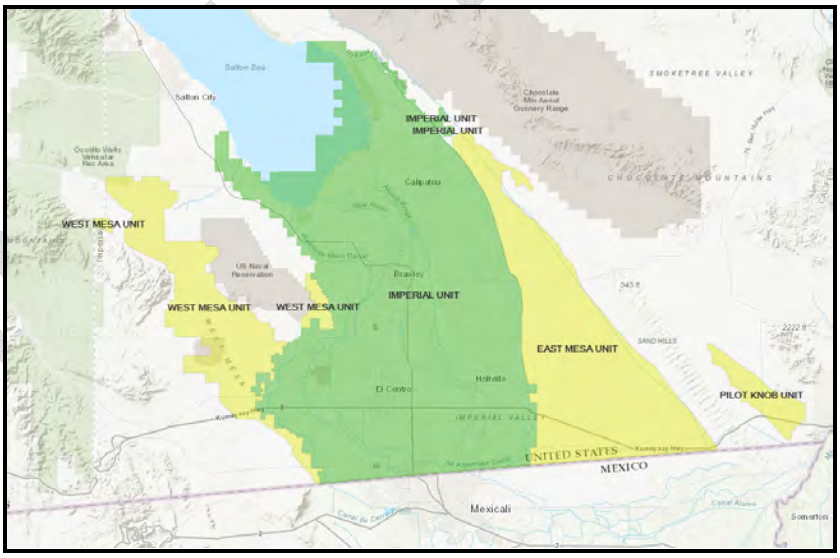
The Urban Area designation on the County's Land Use Plan includes areas surrounding seven incorporated cities: El Centro, Brawley, Calexico, Calipatria, Holtville, Imperial, and Westmorland. These Cities and the County have authority over land use, authority to adopt General Plans and zoning to guide land use, prepare Urban Water Management Plans to guide use of their available water supplies where required to do so, and to act as lead agency pursuant to the California Environmental Quality Act (CEQA).

Imperial Region includes five unincorporated communities: Niland to the north; Heber, Seeley, and the El Centro Naval Air Facility in the center; and Ocotillo/Nomirage in the West Mesa area.

3.1.2 Colorado River Water Supply via Imperial Irrigation District

Colorado River water provided by the Imperial Irrigation District is the primary water supply for the Imperial Region. The IID service area, lying entirely within Imperial Valley, is divided into four units: Imperial, West Mesa, East Mesa, and Pilot Knob (refer to Figure 3-2), with a gross area of 1,061,637 acres. The City of El Centro and the City's Sphere of Influence is located within the Imperial Unit of IID's service area. The Imperial Unit of IID, serves an area of 699,092 acres including the seven major urban areas and approximately, a quarter of Imperial County's unincorporated area.

Figure 3-2: Imperial Irrigation District Units



The East Mesa and West Mesa areas use groundwater that is outside of the IID water service area, but inside the Imperial Region.

Surface water imported from the Colorado River by IID is used to meet all current agricultural and non-agricultural water demands in the IID water service area. Non-agricultural includes municipal, commercial, and industrial including renewable energy; environmental; and recreational water users. IID is a wholesale water provider, which delivers untreated (raw) water to individual user accounts. The cities, including the City of El Centro, are retail water purveyors that treat and convey Colorado River water to retail water accounts.

The seven major urban areas within the IID water service area are the cities of El Centro, Brawley, Calexico, Calipatria, Holtville, Imperial, and Westmorland. Other urban areas within the IID water service area include the unincorporated communities of Heber, Seeley, Niland, the Naval Air Facility at El Centro (NAF El Centro), and two California Department of Corrections and Rehabilitation Facilities (CDCR). The community of Ocotillo/Nomirage is located within the area of West Mesa, and currently uses groundwater. The total population of these cities and communities are expected to increase significantly through the year 2050, subsequently increasing urban water demand.

Rainfall is less than three inches per year and does not contribute to IID water delivery, although at times it does increase or reduce agricultural water demand. Groundwater in the Imperial Valley is of poor quality and is generally unsuitable for domestic or irrigation purposes, though some is pumped for industrial (geothermal) use. Additionally, tile drains are used to dewater the root zone to avoid agricultural root zone contamination, the tile drain and other drainage waters ultimately discharge to the Salton Sea.

All water supply for the City of El Centro comes from untreated Colorado River water imported and delivered by IID through a canal system. The raw water is then treated at the City's water treatment plant, stored, and then pumped into the City's water distribution system.

3.1.3 City of El Centro

The City of El Centro was incorporated on April 16, 1908 and is operated by a Council/Manager form of government. El Centro is a charter city and owns the local hospital El Centro Regional Medical Center. The members of the City Council are also the Successor Agency to the Redevelopment Agency and Successor Housing Agency governing board. The City Council is composed of five elected members who serve four year, staggered, terms. The City Council selects a Council member to serve as Mayor for a one-year term. The current City Council members are:

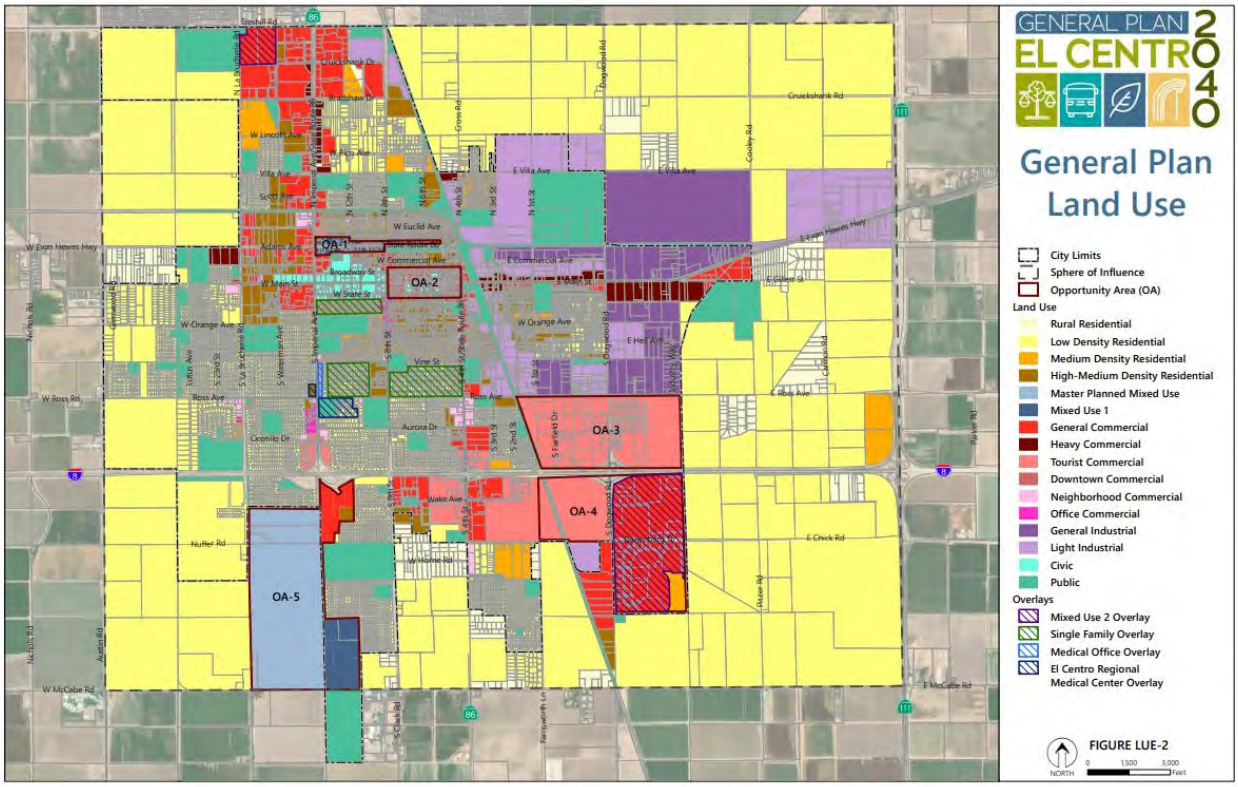
- Mayor Cheryl Viegas-Walker
- Mayor Pro Tem Tomas Oliva
- Council Member Edgard Garcia
- Council Member Sylvia Marroquin
- Council Member Martha Cardenas-Singh

The City of El Centro is located in Imperial County, approximately 120 miles east of San Diego, at the intersection of Interstate 8 and Highway 86. The City encompasses an area of 11.019 square miles (7,052 acres). The Imperial County seat is located in the City of El Centro. The population inside the City boundaries was 45,657 on January 1, 2020 as reported by the California Department of Finance (DOF). The City is the largest city and principal trading center in the County.

The City has defined a Sphere of Influence (SOI) and has included this land in their land use planning (Planning Area) and in their Urban Development Program to facilitate residential, industrial, and business growth in those areas where public services are available. The SOI provides a variety of growth locations so an adequate supply of developable land will maintain reasonable housing costs and promote economic development.

The City's incorporated and SOI boundaries are shown on Figure 3-3[3]. In all, the City's SOI consists of approximately 16,000 acres of land bound on the north by the Central Drain/Treshill Road, the south by McCabe Road, the east by State Route 111, and the west by Austin Road. The City of Imperial is located directly north of the City's northern SOI boundary. The unincorporated township of Heber is located directly south of the City's southern SOI boundary.

Figure 3-3: City and Sphere of Influence Boundaries Map



The City's SOI outside the existing boundaries of the City is currently in the jurisdiction of the County but is planned for possible incorporation into the City boundaries at some future time.

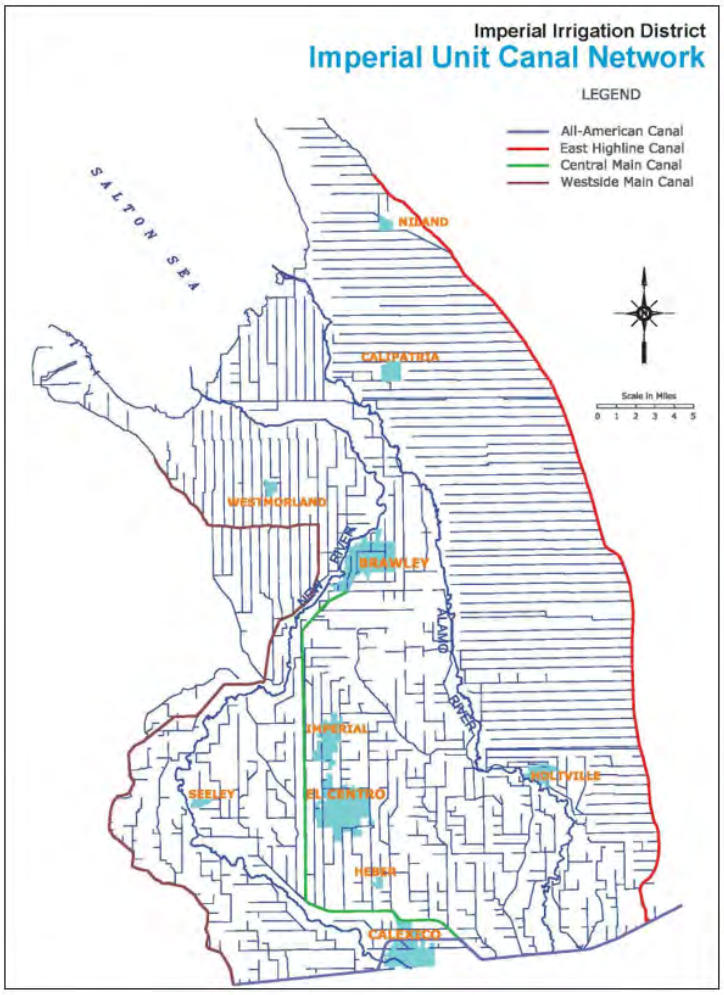
[3] Extracted from March 2021 Public Review Draft El Centro General Plan http://www.cityofelcentro.org/userfiles/file/Planning/General%20Plan/General%20Plan%20Update%202040/Public%20Review%20Period%20Documents/2_0_Land%20Use%20Element_Public%20Review%20Draft%2003-09-21.pdf.

Much of the land surrounding the City is involved in agricultural uses, as farming has historically been a principal component of the region's economy. The current adopted General Plan (2004) as well as the March 2021 Draft Public Review General Plan does not contain an exclusive agricultural land use designation, but both documents allow agricultural uses within the Rural Residential designation. It is generally the City's policy to allow continuation of existing agricultural activity on land while planning for the development of this land for other uses.

3.1.3.1 City Water System Description

As previously noted, IID is the regional water supplier in the Imperial Valley, delivering wholesale, raw Colorado River water to all agricultural lands and urban water retailers within its water service area including the City of El Centro. The City receives all of its water supply from the Colorado River through IID's All-American Canal and Central Main Canal. The South Date Canal and the Dahlia Lateral Number 1 deliver the raw water to the City from the Central Main Canal at a combined supply capacity of 31.6 MGD. The IID's canal system is depicted in Figure 3-4.

Figure 3-4: Imperial Irrigation District Main Canal and Lateral System Map



Raw water imported from IID is stored in four open, concrete reservoirs, each rated at 12.5 MG for a total City raw water storage capacity of 50 MG. The raw water is treated to potable water standards at the City's water treatment plant. Water treatment includes clarification, filtration, and chlorination. Potable water is stored in three reservoirs at the treatment plant with a combined storage capacity of 10.0 MG, and in one 4.0 MG reservoir located approximately two miles northwest of the treatment plant (total potable water storage capacity of 14.0 MG). Potable water is pumped from the potable water reservoirs into the distribution system. The treatment Plant and storage facilities can be seen in Photo 3-1.

The topography of the City is essentially flat, with ground elevations within the City's Sphere of Influence ranging from 20 feet to 51 feet below mean sea level. Due to the minor variations in ground elevation throughout the SOI, the City's water distribution system consists of only one pressure zone. This zone is supplied by two booster pump stations, which are located at the water treatment plant (WTP) and the remote ground storage tank site (La Brucherie). The City's distribution system consists of approximately 148 miles of pipeline, which range from 3/4 inch to 30 inches in diameter.

Photo 3-1: El Centro Water Treatment Plant

3.2 Service Area Boundaries

The boundaries of the City and the City's Sphere of Influence, along with existing and planned land use, within these boundaries are shown on Figure 3-3. The area within the City boundaries is currently estimated to be approximately 70 percent developed, and the total area within the SOI boundary is estimated to be approximately 20 percent developed. However, almost all the land developed outside the City boundaries and within the City's SOI boundaries is currently serviced by other water supplies, i.e., private wells. The City reports that of the 10,458 water service connections in the City's water service area in 2020, all were within the City boundaries, i.e., none were within the City's unincorporated Sphere of Influence areas. Hence, the City's water service area coincides exactly with the City's incorporated boundaries.

3.3 Service Area Climate

Located within the Imperial Valley, the City of El Centro is part of an arid desert area, characterized by hot, dry summers and mild winters. Summer temperatures typically exceed 100 degrees Fahrenheit (°F), and the winter low temperatures rarely drop below 32 °F.

The average monthly evapotranspiration, rainfall, and temperatures are listed in Table 3-1A. As shown, the average high and low temperatures for this area are 88.8 °F and 56.7 °F dating back to 1932, and the average rainfall is 2.64 inches. The majority of the rainfall occurs from December through March. Periodic summer thunderstorms are common in the region. The Standard average evapotranspiration (ETo) for this area is 73.11 inches dating back to 1989.

Table 3-1 A: Historical City Climate Characteristics

Table 3-1 A: Historical City Climate Characteristics				
Month	Standard Average ETo[4] (inches)	Average Rainfall[5] (inches)	Daily Max Temperature[5] (degrees F)	Daily Min Temperature[5] (degrees F)
January	2.56	0.36	70.1	40.3
February	3.56	0.34	73.9	43.9
March	5.87	0.23	79.6	48.3
April	7.57	0.07	86.8	53.7
May	9.07	0.02	94.8	60.5
June	9.39	0.01	103.6	67.7
July	9.10	0.09	108.2	76.1
August	8.44	0.31	106.9	76.6
September	6.96	0.26	102.7	70.0
October	5.17	0.25	92.0	59.0
November	3.12	0.19	79.2	47.4
December	2.30	0.41	70.3	40.5
Annual	73.11	2.54	89.2	56.7

Imperial Valley elevations range from a few feet above to 273 feet below mean sea level (MSL). The U.S./Mexico border, located at the southern end of Imperial Valley, has an elevation of four feet above MSL. The Salton Sea, located at the northern end of Imperial Valley, has a water level of 230 feet below MSL

[4] Standard Average ETo from California Irrigation Management Information System (CIMIS) Meloland Station 87, the CIMIS station closest to the city of El Centro (approximately 7 miles east of El Centro; elevation -50 feet below MSL; Average for 12/12/1989 through 02/28/2021.

[5] Data obtained from Western Regional Climate Center (WRCC), Desert Research Institute, Reno, Nevada (http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca2713); WRCC program administered by the National Oceanic and Atmospheric Administration (NOAA); data extracted from monitoring Station 042713 at El Centro 2 SSW, CA for period 3/01/1932 through 4/20/2021.

(the sea bottom is 273 feet below MSL). El Centro is the largest American city to lie entirely below sea level (39 feet below MSL on average).

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.

The local and regional climates are being impacted by climate change which, in turn, has an impact on water demands, supplies and supply reliability. Scientists and water purveyors are already observing the effects of climate change and the resulting risks related to water planning. A discussion of the effects of climate change on water demands, supplies, and reliability is presented in later sections of this UWMP.

3.4 Service Area Population and Demographics

3.4.1 Service Area Population

As previously noted, the City reports that all of its 10,458 active and inactive water service connections in the El Centro's water service area in 2020 are located within the City's boundaries. That being the case, there is a 100 percent match between the City water service area and City jurisdictional boundaries. DOF population estimates were therefore used to calculate SBx7-7 water use targets presented in Chapter 5.

Historical and current City population, as reported by the City Planning & Zoning Division and the California DOF, is shown in Table 3-1B. While the City's population grew by 42.9% between 1990 and 2015, growth between 2015 and 2020 slowed considerably, which was consistent with declining growth patterns in many other areas of California.

Table 3-1 B: Historical and Current Population

Table 3-1 B: Historical & Current Population[6]					
	1990	2000	2010	2015	2020
City of El Centro	31,384	37,835	42,598	44,847	45,657
% Increase since 1990	---	20.6%	35.7%	42.9%	45.4%

Population projections provided to the City of El Centro by the Southern California Association of Government's (SCAG), suggest the City's urban area population will grow to 58,753 by 2045, which is an increase of 28.7% relative to 2020. The SCAG population projections for the City's urban area for the years 2025 through 2045, which are recognized and used by the City's Planning & Zoning Division, are shown in Table 3-1.

[6] Population data for the years 1990-2010 was extracted from the City of El Centro 2013-2021 Housing Element, September 2013 (http://www.cityofelcentro.org/userfiles/file/Planning/General%20Plan/General%20Plan%20Upload/El%20Centro%20GP_Housing.pdf); Population data for 2010-2020 was obtained from the California Department of Finance Website https://www.dof.ca.gov/Forecasting/Demographics/Estimates/e-4/2010-20/).

Table 3-1: Retail Population – Current and Projected

Table 3-1: Retail: Population - Current and Projected[7]						
Population Served	2020	2025	2030	2035	2040	2045
	45,657	48,208	50,759	53,018	55,886	58,753
Percent Increase Since 2020	---	5.6%	11.2%	16.1%	22.4%	28.7%

As previously noted, the area within the City boundaries is currently estimated to be approximately 70 percent developed, and the total area within the SOI boundary is estimated to be approximately 20 percent developed. However, almost all the developments outside the City boundaries and within the City's SOI boundaries are currently serviced by other water supplies, i.e., private wells, etc.

By 2045, a significant percentage of this land inside the SOI will be developed and will receive water service from the City. To identify those areas that will require more extensive planning, ensuring the provision of adequate levels of public services and facilities including water system infrastructure, the City has divided the undeveloped portion of their Planning Area into three development tier areas as discussed in Section 3.4.2.

3.4.2 Water-Use-Related Land Use Planning

As noted in Section 3.4.1, the City's population increased 45.4% between 1990 and 2020 and is projected to increase another 28.7% by 2045. While the growth rate has slowed over the past five years, even slower growth necessitates well-conceived land use planning by the City as a pre-condition to meeting the City's future water needs.

Existing land use in the City is governed by the provisions of the City of El Centro Zoning Ordinance and is guided by the goals and policies presented in the current adopted General Plan (2004) as well as in the proposed General Plan, which is currently out for public review. By implementing the language of the General Plan Land Use Element, the City dictates what type of land uses are allowed throughout specific areas within its boundaries. The General Plan Land Use Element lists the following land use designations: Rural Residential, Low Density Residential, Medium Density Residential, High Medium Density Residential, Mixed Use (includes Master Planned and Mixed Use 1), Commercial (includes General, Heavy, Tourist, Downtown, Neighborhood and Office Commercial), Industrial (includes General and Light Industrial), Civic, and Public. Land use designations within the City and SOI boundaries are also shown on Figure 3-3.

To identify those areas that will require more extensive planning, ensuring the provision of adequate levels of public services and facilities, the City has divided the undeveloped portion of the Planning Area into three development tier areas: Tier I, Tier II, and Tier III.

Designation of an area in one of the three tiers does not determine the sequence of development within the

[7] 2020 Population estimate was obtained from DOF website (please refer to footnote in Table 3-1A for a link to the source). Population projections for 2030, 2035 and 2045 were based on SCAG SoCal Connect Regional Transportation Plan growth projections provided to the City of El Centro. Projections for 2025 and 2040 were calculated by linear interpolation between the 2020 and 2030 populations and the 2035 and 2045 projections, respectively.

Planning Area, but rather, delineates those areas that, due to a lack of public facilities, may require more detailed planning prior to development. For example, development in Development Tier II and III may require a greater cost for infrastructure improvements than would the same development if located within the Development Tier I area since Tier I has greater access to existing public services and facilities.

Tier II and III areas may also require that facilities be sized, at developer expense, to accommodate additional development within an entire Tier Subarea (described below), or such larger area as may be required by the City. Reimbursement agreements, improvement districts, and other public finance strategies may be used to cost-effectively provide needed public infrastructure, as deemed necessary by the City Council.

The following language describing the three development tiers has been extracted from the City's Land Use Element Public Review Draft dated March 2021 (this language is similar, if not identical, to prior language included in the City's 2004 Adopted General Plan and referenced in the City's 2015 UWMP:

- Development Tier I – Current Urban Service Area: Development Tier I includes land within and adjacent to the present City limits (see Figure LUE11). In most cases, new development within this area can be served by gravity sewer lines to existing trunk sewers. Generally, water lines and reservoirs are also adequate to serve new development; however, easements and financial contributions to improve the ultimate sewer and water systems may be required. Fire, police, schools, parks, library, medical, roads, and other City facilities and services also are in proximity to these areas, though service capacities are likely to be limited and improvements to existing facilities and/or new facilities may be needed to adequately accommodate new development. Subdivisions of land and commercial, industrial, and mixed use development within Development Tier I generally would follow standard zoning, subdivision, and environmental review procedures and would not require a Community Facilities Study.
- Development Tier II – Planned Urban Service Area: Development Tier II includes land both within and adjacent to the City limits (see Figure LUE-11) but differs from Development Tier I in that public infrastructure to serve new development is more limited. Essential required improvements may include sewer and water pump stations, water storage reservoirs, and sewer trunk lines for force mains. New schools, parks, roadway, pedestrian, and bicycle improvements, and fire stations also may be required to adequately serve development of Development Tier II areas. As with Development Tier I, additional service capacity for police, library, medical, and other services also may be needed to accommodate new development. Preparation of a Community Facilities Study is required for most development within Development Tier II areas, including residential subdivisions, multi-family projects, and commercial, industrial, or mixed-use development, unless otherwise exempted as described in the Community Facilities Study Requirements and Exemptions.
- Development Tier III – Future Urban Service Area: Development Tier III encompasses unincorporated lands that are not anticipated to be developed for at least 10 years (see Figure LUE-11). If development other than agricultural and related business or residential subdivisions of five or fewer parcels is proposed within currently unincorporated portions of Development Tier III areas, the developer or subdivider will be required to obtain concurrence of the City to allow the project, and the improvement of all public facilities will be required to be provided by the developer to City standards. Uses that do not require treated water from, or disposal of sewage to City systems, may be permitted. Subdivision of land and commercial, industrial, and mixed-use development within this area will require that a Community Facilities Study be prepared, unless otherwise exempted as described in the Community

Facilities Study Requirements and Exemptions. In addition, if a project is proposed within the Development Tier III area, a Development Tier Subarea shall be established by the City for which a Community Facilities Study will be required to be prepared, as described below.

- Development Tier Subarea: A Development Tier Subarea will be established for development projects proposed in the Development Tier III area to allow for the planning for water and sewer services through the preparation of a Community Facilities Study. This is not required for development in the Development Tiers I and II since the City's Water and Sewer Master Plans delineate water and sewer improvements needed to serve those areas.

  The Water and Sewer Master Plans shall be used to evaluate the project's water and sewer needs and the impact of those needs on the City's water and sewer systems. The project drainage and flood control facilities shall be evaluated using whatever master plans are available from the City or other agency having jurisdiction over such matters. The project needs and impacts related to local and regional roadways shall be evaluated using the Mobility Element.

The City prepared a Service Area Plan (SAP) dated February 2016 in accordance with the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000, which requires that a plan identifying the existing and projected demand for public facilities and services (including water system facilities and water service) be prepared by all incorporated cities and special districts within the State.

The 2000 legislation is implemented by Imperial County Local Agency Formation Commission (LAFCo), whose policy states that a city within the jurisdiction of Imperial County LAFCo must prepare an SAP before any formal annexation of land into the city's boundaries can take place. The City's SOI outside the existing boundaries of the City is currently in the jurisdiction of the County, but all land outside the City boundaries and inside the SOI boundaries is planned for future incorporation into the City boundaries.

The City has developed 11 General Plan land use designations and five sub-designations within the Planning Area and a corresponding indication of maximum density or intensity of development. The maximum allowable development on individual parcels is governed by these measures of density or intensity, which are intended as policy-level guidance for future development within the City. These and other General Plan land use policies are implemented through the City's Zoning Ordinance. The City will revise its Zoning Code to ensure consistency with the land uses described in this Element.

The Residential categories include four designations that allow for a range of housing types and densities, including Rural Residential, Low Density Residential, Medium Density Residential, and High-Medium Residential. These designations provide a range of densities to ensure compatibility with existing residential development, provide a range of housing types and prices, and allow for appropriate densities around areas that are not appropriate for higher population densities, such as the area around the wastewater treatment plant.

The non-residential land use categories include a variety of designations such as Commercial, Industrial, and Community Facilities more fully described as follows:

- General Commercial – The General Commercial designation in the currently adopted General Plan (2004) includes three subcategories: Neighborhood Commercial, Office Commercial, and Heavy Commercial, which are defined geographically on the Zoning Map.

- Downtown Commercial – The Downtown Commercial applied in the downtown area. This designation is included to ensure the land uses occurring in the downtown area are appropriate to support the continued commercial viability of the area.
- General Industrial – The General Industrial category in the currently adopted General Plan includes two categories: General Industrial and Planned Industrial, which are geographically defined on the Zoning Map. The General Industrial category is further broken down into two subcategories: Light Manufacturing and General Manufacturing. The City's proposed Land Use Element Public Review Draft dated March 2021 calls for removing the Planned Industrial category, while maintaining the General Industrial category (and Light Manufacturing and General Manufacturing subcategories).
- Community Facilities – The Community Facilities designations include Civic and Public, which allow for the provision of important public facilities.

For various reasons, many parcels in the community have not been developed to their maximum density or intensity. In the future, maximum development can be expected to occur only on a limited number of parcels. Therefore, the overall future development of the City is anticipated to occur at the average level of development intensity or density. This does not mean that developers can only develop at the average density and intensify, but the average development projection allows the City to plan for future public services to support anticipated future development.

In the City's current adopted Land Use Element (2004 General Plan), the term density is used for residential uses and refers to the population and development capacity of residential land and is described in terms of dwelling units per net acre of land (du/acre), exclusive of existing and proposed streets and rights-of-way.

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4 SYSTEM WATER USE CHARACTERIZATION

Southern California's urban water demand has been largely shaped by the efforts to comply with SBx7-7. This law requires all California retail urban water suppliers serving more than 3,000 acre-feet per year (AFY) or 3,000 service connections to achieve a 20 percent water demand reduction (from a historical baseline) by 2020. The City has been actively engaged in efforts to reduce water use in its service area to meet the final 2020 water use target. Meeting this target is critical to ensure the City's eligibility to receive future state water grants and loans.

In April 2015 Governor Brown issued an Executive Order as a result of one of the most severe droughts in California's history, requiring a collective reduction in statewide urban water use of 25 percent by February 2016, with each agency in the state given a specific reduction target by DWR. In response to the Governor's mandate, the City adopted Ordinance No. 15-07, on June 16, 2015, establishing provisions against water waste and implementing higher (more restrictive) stages of water conservation to achieve its demand reduction target of 20 percent. The City was able to achieve water use reductions of up to 24.8% during the period between June 2015 and February 2016 as compared with baseline usage in the same months of 2013. Further discussion on the City's water conservation ordinance is covered in Chapter 8, Water Shortage Contingency Plan.

On May 9, 2016, Governor Brown issued Executive Order B-37-16 that builds on temporary statewide emergency water restrictions to establish longer-term water conservation measures, including permanent monthly water use reporting, new permanent water use standards in California communities and bans on clearly wasteful practices. Through a public process and working with partners such as urban water suppliers, local governments, and environmental groups, DWR and the SWRCB will develop new water use efficiency targets as part of a long-term conservation framework for urban water agencies. These targets go beyond the 20% reduction in per capita urban water use by 2020 that was embodied in SBx7-7 and will be customized to fit the unique conditions of each water supplier.

In 2018, Governor Brown signed into law the water conservation bills AB 1668 and SB 606. These bills were a result of an Executive Order from the Governor during the recent drought which required State agencies to develop and recommend a long-term water conservation framework to ensure adequate water supplies for the State now and in the future. The two bills establish guidelines for efficient water use and a framework for implementation and oversight of the new standards, which must be in place by 2022.

This section analyzes the City's current water demands by customer type, factors that influence those demands, and projections of future water demand for the next 25 years.

4.1 Recycled Versus Potable and Raw Water Demand

Surface water imported from the Colorado River by IID is the sole water supply for the City of El Centro. The raw water is treated to potable water standards at the City's water treatment plant before being distributed to the City's water service area. For the City of El Centro, there is no recycled water supply; no indirect recycled water use; no water placed in long-term storage; no water delivered to another urban supplier; no water delivered for agricultural use; and no significant process water use.

4.2 Water Use by Sector

4.2.1 Water Use Sectors Listed in Water Code

An agency's water consumption can be projected by understanding the type of use and customer type creating the demand. Developing local water use profiles helps to identify quantity of water used, and by whom within the agency's service area. Knowledge of water use by customer type enables the City to develop more effective water conservation programs and to project the future benefit of those programs.

Historical water service connections by sector for the City are shown in Table 4-1A. Single-family connections account for approximately 80 percent of the total water service connections. The total number of active connections has increased 6.8 percent since 2010 with total residential connections increasing 3.8 percent. In addition to the active permanent connections included in Table 4-1A, the City also has 135 Fire Suppression meters, 24 temporary construction meters and 85 inactive accounts for which the meters have been removed.

Table 4-1 A: Historical and Current Water Service Connections

Table 4-1 A: Historical and Current Water Service Connections (as of December 2020)

Customer Sector	2010	2015	% Change (2015-2010)	2020	% Change (2020-2015)	% Change (2020-2010)
SF Residential	8,181	8,360	21.9%	8,333	-0.3%	1.9%
MF Residential	338	331	-2.1%	506	52.9%	49.7%
Commercial/Institutional	1,018	1,026	0.8%	1,015	-1.1%	-0.3%
Industrial	2	2	0%	2	0%	0%
Landscape	23	187	813%	220	17.6%	957%
Agriculture	0	0	0%	0	0%	0%
Off (Vacant) Connections	NA	NA	NA	138	--	--
Total Active Connections	9,562	9,906	3.6%	10,214	3.1%	6.8%
Other – Fire Suppression Meters	NA	NA	NA	135	NA	NA
Other – Construction Meters	NA	NA	NA	24	NA	NA
Inactive Connections (Meter Removed)	NA	NA	NA	85	NA	NA
Total Active and Inactive Connections	NA	NA	NA	10,458	NA	NA

Historical water use by sector for the City is shown in Table 4-1B. Metered residential water use (which excludes non-revenue water) accounted for approximately 72 percent of all metered water use in 2010, 2015 and 2020. Total metered residential water use increased by 7.8% since 2015 but decreased by 2.6% since 2010. Total water use including unaccounted-for water increased by 6.5 percent since 2015 and decreased by 5.8 percent since 2010. Non-Revenue water, which is further defined in Section 4.2.2, decreased by 16.3 percent in between 2015 and 2020 and decreased by 43.6 percent since 2010.

Table 4-1 B: Historical Water Use and Water Loss

Table 4-1 B: Historical Water Use and Water Loss						
	2010 Water Use/Supply	2015 Water Use/Supply	% Change (2015-2010)	2020 Water Use/Supply	% Change (2020-2015)	% Change (2020-2010)
Single-Family Residential	4,399	3,870	-12.1%	4,039	4.4%	-8.2%
Multi-Family Residential	822	848	3.2%	1,048	23.6%	27.5%
Total Residential	5,221	4,719	-9.6%	5,087	7.8%	-2.6%
Commercial	1,295	906	-30.0%	813	-10.3%	-37.2%
Institutional/Governmental	451	407	-9.8%	435	6.9%	-3.5%
Industrial	5	1	-80.0%	0.6	-40.0%	-88.0%
Landscape	235	519	221%	771	48.6%	328%
Fireline	0	0	0%	0[8]	0%	0%
Non-Revenue Water	839	565	-32.7%	473[9]	-16.3%	-43.6%
Total Water Use	8,046	7,117	-10.8%	7,580	6.5%	-5.8%
Water Loss %[10]	10.4%	7.9%	--	6.2%	--	--

4.2.2 Non-Revenue Water

Non-revenue water is defined by the International Water Association (IWA) and American Water Works Association (AWWA) as the difference between distribution systems input volume (i.e., production at the City's Water Treatment Plant)) and billed authorized consumption. Non-revenue water consists of three components: unbilled authorized consumption (e.g., hydrant flushing and firefighting), real losses (e.g., leakage in mains and service lines), and apparent losses (unauthorized consumption and customer metering inaccuracies). An increase or decrease in treated water storage during the calendar year must

[8] Actual reported Fireline usage in 2020 was 1,000 gallons or approximately 0.003 AF and is therefore entered as zero in this table.

[9] Non-Revenue Water in 2020 was calculated as follows: (total water production at the City's Water Treatment Plant) – (water system sales through metered connections) – (increase in treated water storage reservoirs between 1/1/20 and 12/31/20 reported by City staff) = (7,580 AF) – (7,106 AF) – (1 AF) = 473 AF.

[10] Including unbilled and unmetered water use typically used for fighting fires, flushing water mains, conducting fire flow tests, etc.

also be accounted for when determining total non-revenue water volume. Refer to Section 4.3 for a detailed discussion of non-revenue water demands.

4.2.3 Past and Current Water Use

Historical water use by customer class for the past five years, i.e., since the previous UWMP, is shown in Table 4-1C. Total water use, including non-revenue water, has increased by 6.5% from 7,117 AF in 2015 to 7,580 AF in 2020.

Table 4-1 C: Historical Water Use by Customer Class

Table 4-1 C: Historical Water Use by Customer Class						
Customer Class	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Single Family	3,870	NA	4,121	4,214	3,953	4,039
Multi-Family	848	NA	835	849	940	1,048
Commercial	906	NA	1,441[11]	962	1,342[11]	813
Institutional/Governmental	407	NA		463		435
Industrial	1	NA	1	1	1	0.6
Landscape Irrigation	235	NA	691	695	678	771
Fireline	0	NA	0	0	0	0
Total Sales	**6,552**	**6,718**	**7,089**	**7,184**	**6,914**	**7,107**
Non-Revenue Water	565	604	281	569	449	473
Potable System Demand	**7,117**	**7,322**	**7,370**	**7,753**	**7,363**	**7,580**
Recycled Water	0	0	0	0	0	0
Agricultural Water	0	0	0	0	0	0
Total Water Demand	**7,117**	**7,322**	**7,370**	**7,753**	**7,363**	**7,580**

There are 10,458 current active and inactive service connections in the City's water distribution system. All active connections (including temporary construction meters) are metered. Included among the 10,458 service connections are 85 inactive connections where meters have been removed. Approximately 72 percent of the City's metered water use in 2020 (excluding non-revenue water) was residential use. Commercial/Institutional, industrial, and landscape irrigation account for the remaining 28 percent of water demands.

4.3 Projected Water Use

Demand projections were based on existing use data as well as projected land use, population, economic growth, and future passive and active conservation measures (baseline conservation). Baseline

[11] City's records combined water delivery data for 2017 and 2019 for Commercial and Institutional/Governmental.

conservation assumes the implementation of future passive measures affecting new developments, including compliance with the State Model Water Efficient Landscape Ordinance, plumbing code efficiencies for toilets, and expected plumbing code requirements for high-efficiency clothes washers.

4.3.1 Demand Projection Methodology

To increase the accuracy of future demand projections, a water demand base-year was chosen as the average of 2018 and 2019, given the 2020 water use by user class was likely impacted by COVID-19. Available SCAG demographic population projections were used to drive the forecast. The major focus was on single-family (SF) and multifamily (MF) residential demand as the primary water demand in the City, given that (1) residential demand comprises roughly two-thirds of total consumption in most years and (2) the remaining commercial/institutional/industrial (CII) and landscape irrigation demands have been relatively consistent over the years.

The base-year SF & MF residential demand and the associated indoor and outdoor per capita water usage demand factors for existing and new housing can therefore be calculated as follows:

- From Table 4-1C, (5,063 AF + 4,893 AF)/2 = 4,978 AFY or 1,622 MGY. This demand was then divided by the total number of residential housing units (13,938[12]) and by 365 days per year, resulting in a demand of 319 gallons per day (gpd) per housing unit.
- To conform with current water efficiency standards, the existing baseline indoor water use was estimated to be 55 gallons per capita per day (GPCD) applied to the estimated 3.5 people per unit[13] per residential housing unit (for both SF and MF housing).
- The Total Annual Residential Baseline Year Demand in AF is therefore = 4,978 AF (adjusted as described below).
- Assuming the average breakdown between SF and MF is 82.03% and 17.97%, respectively (i.e., the average of the 2018 and 2019 split), the total baseline year SF Residential demand is 4,083 AF and the total MF Residential Demand is 895 AF.
- SCAG projects an increase of 6,548 households in El Centro by 2045 (from 13,938 in 2020 to 20,486 in 2045).[14] This is an increase of approximately 32% in total households over the next 25 years. These new housing units will all have to comply with new water efficiency standards as described below. Therefore, by 2045, 68% of all housing will be comprised of existing housing and 32% will be new housing.
- Assume the percentages of existing vs. new housing will gradually ramp up in a linear manner, from 100% existing housing and 0% new housing in 2020 to 68% existing (i.e., built prior to 2020) non-water efficient housing and 32% new water efficient housing by 2045. This linear increase equates to constructing approximate 1,309 new housing units every five years.

[12] Per SCAG Final RHNA Methodology Data Appendix, adopted by the SCAG Regional Council on March 5, 2020 - https://scag.ca.gov/sites/main/files/file-attachments/scag-final-rhna-data-appendix-030520.pdf?1602189406 (refer to third page of the 240 page file)

[13] Per SCAG Profile of the City of El Centro, May 2019 - https://scag.ca.gov/sites/main/files/file-attachments/elcentro_localprofile.pdf?1605653707 (refer to page 3).

[14] Per SCAG 6th Cycle Regional Housing Needs Assessment (RHNA) adopted on March 4, 2021- https://scag.ca.gov/rhna (Refer to file labeled RHNA Final Allocation Calculator).

- Per 2020 SCAG demographic data, 98.6% of all housing in El Centro was constructed prior to 2010[15] and therefore does not meet current water efficiency standards.
- For purposes of estimating future demand projections, it will be assumed that all current housing (i.e., 100%) does not meet current new housing water efficiency standards; however, all new housing built over the next 25 years will meet the new standards. Using the 1,309 new housing units per five-year cycle referenced above, yields an existing vs. new housing split as shown in Table 4-1D.

Table 4-1 D: Projected Existing vs. New Housing Split in El Centro (2020 – 2045)

Table 4-1 D: Projected Existing vs. New Housing Split in El Centro (2020 – 2045)					
Year	**Existing Housing Units in 2020**	**New Housing Units Added Since 2020**	**Total Housing Units**	**Existing Housing % of Total Housing**	**New Housing % of Total Housing**
2020	13,938	0	13,938	100%	0%
2025	13,938	1,309	15,247	91.4%	8.6%
2030	13,938	2,618	16,556	84.2%	15.8%
2035	13,938	3,928	17,866	78.0%	22.0%
2040	13,938	5,239	19,177	72.7%	27.3%
2045	13,938	6,548	20,486	68.0%	32.0%

- As noted above, the average baseline demand for the combined SF and MF housing units is 4,978 AF (or 1,622 MG). Given that the baseline was calculated from an average of 2018 and 2019 residential demands, the residential per capita use factor for those two years can be calculated from the DOF population estimates, which were 45,701 and 45,774 for 2018 and 2019, respectively or an average of 45,738. Using this methodology, the average residential per capita usage during 2018 and 2019 was therefore (1,622 MG)/45,738)/365 days/year = 97.2 GPCD.
- To comply with current water efficiency standards, a further reduction in the indoor water usage demand for existing housing from 55 GPCD to 52.5 GPCD, will be assumed for the five years after 2025, with a further reduction to 50 GPCD for indoor water usage all years after 2030. These assumptions yield the following total per capita usage factors:
  - For 2025, 97.2 GPCD;
  - For 2030, 94.7 GPCD (97.2 – 2.5); and
  - For 2035-2045, 92.2 GPCD (97.2 – 5.0).
- For all new housing units, a 50 GPCD indoor water usage demand factor will be assumed for all years going forward.

[15] Per SCAG's August 2020 Pre-Certified Local Housing Data Report for the City of El Centro - https://scag.ca.gov/sites/main/files/file-attachments/elcentro_he_0920.pdf?1603167296.

- The total outdoor usage demand for existing housing can be calculated by subtracting the indoor demand from the overall demand. That yields an outdoor demand of 42.2 GPCD (97.2 – 55). It is assumed this demand will remain constant through 2045.
- For all new housing, the indoor demand factor will be set at 50 GPCD, while the outdoor demand factor will reflect a 25% reduction from that of existing housing, thus conforming with water efficiency standards for new housing. This results in a total demand factor for new housing of 81.7 GPCD (50 + [0.75]) x [42.2]). This factor will be applied to all new housing constructed through 2045.

In summary:

- Total Existing Housing Residential Per Capita Usage through 2025 (from above) = 97.2 GPCD.
- Total Existing Housing Residential Per Capita Usage from 2025 to 2030 = 94.7 GPCD.
- Total Existing Housing Residential Per Capita Usage after 2030 = 92.2 GPCD
- Total New Housing Residential Per Capita Use for 2025-2045 = 81.7 GPCD.

The City's CII and landscape irrigation demands reflected in Table 4-2 assumed a base year averaging the 2018 and 2019 demands (discarding 2020 due to COVID-19 impacts) and then increasing them annually by the SCAG projected population increases between 2020 and 2045. Total and individual demands are as follows (the percentage breakdown between Commercial and Institutional/Governmental was assumed to be the same in 2019 (when no breakdown was available) as it was in 2018):

- Total CII + Landscape Demand = (1,426 AF + 695 AF + 1,343 AF + 678 AF)/2 = 2,071 AF
- Total Commercial Base Year Demand = (962 AF + 906 AF)/2 = 934 AF
- Total Institutional/Governmental Base Year Demand = (463 AF + 436 AF)/2 = 450 AF
- Total Industrial Base Year Demand = (1 AF + 1 AF)/2 = 1 AF
- Total Landscape Irrigation Base Year Demand = (695 AF + 678 AF)/2 = 687 AF

Projected distribution system losses were set equal to the average losses over the past six years of 6.4% as shown in Table 4-4.

4.3.2 25-Year Projections

A key component of the 2020 UWMP is to provide insight into the City's future water demand outlook. The City's current potable demand (Table 4-1) is met entirely through raw water imported from IID. Water use was projected in five-year increments through 2045 for a 25-year planning horizon and is shown in Table 4-2. The projection was extended past the required 20-year horizon to bridge the gap in data between UWMP cycles. Section 4.4 provides the water use projections for El Centro's service area.

4.4 Worksheets and Reporting Tables

4.4.1 Submittal Table 4-1: Total Gross Water Demand by Sector – 2020

All water system demands in the City are met by raw water surface water imported from the Colorado River and purchased from IID. This imported water is the sole water supply for the City of El Centro. The raw water is treated to potable water standards at the City's water treatment plant before being distributed to the City's water service area. There is no current and no projected recycled water supply and no indirect recycled water use projected for the City.

Table 4-1 contains a summary of the City's water demand in AF by use type for the calendar year 2020.

Table 4-1 Retail: Demands for Potable and Raw Water – Actual 2020

Table 4-1 Retail: Demands for Potable and Raw Water – Actual 2020[16]			
Use Type	2020 Actual		
	Additional Description (as needed)	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	4,039
Multi-Family		Drinking Water	1,048
Commercial		Drinking Water	813
Institutional/Governmental		Drinking Water	435
Industrial		Drinking Water	1
Landscape		Drinking Water	771
Other Potable	Fireline	Drinking Water	0
Losses	Non-Revenue Water	Drinking Water	473
		TOTAL	7,580

[16] Demands are based on the City's billing records for the period from January 1, 2020 through December 31, 2020.

4.4.2 Submittal Table 4-2: Gross Water Use by Sector - Projected

Table 4-2 is a projection of the City's potable and raw water demand in AF for the next 25 years.

Table 4-2 Retail: Demands for Potable and Raw Water – Projected (AFY)

Table 4-2 Retail: Use for Potable and Non-Potable Water - Projected[17]						
Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Single Family		4,275	4,362	4,426	4,642	4,858
Multi-Family		937	956	970	1,017	1,065
Commercial		986	1,039	1,084	1,143	1,202
Institutional/Government		475	500	522	551	579
Industrial		1	1	1	1	1
Landscape		725	764	798	841	884
Fireline		0	0	0	0	0
Non-Revenue Water		506	521	533	560	587
Other Non-Potable		0	0	0	0	0
Total		7,905	8,143	8,334	8,755	9,176

The demand data presented in this section accounts for passive and active savings in the future. Passive and active savings are anticipated to continue for the next 25 years and will result in continued water saving and reduced consumption levels.

4.4.3 Submittal Table 4-3: Total Gross Water Use (Potable and Non-Potable)

Based on the information provided above, the total demand (potable, raw, and recycled water) is listed below in Table 4-3.

Table 4-3 Retail: Total Gross Water Use – Potable and Non-Potable

Table 4-3 Retail: Total Gross Water Use (Potable and Non-Potable)						
	2020	2025	2030	2035	2040	2045
Potable Water, Raw, Other Non-potable (From Tables 4-1 and 4-2)	7,580	7,905	8,143	8,334	8,755	9,176
Recycled Water Demand (From Table 6-4)	0	0	0	0	0	0
Total Water Use	7,580	7,905	8,143	8,334	8,755	9,176

[17] Demand projections are based on the population increases referenced in Table 3-1B, with applied residential conservation as described in Section 4.3.1 (Demand Projection Methodology).

4.4.4 Submittal Table 4-4: Preceding Five-Year Water Loss Audit Reporting

Water loss audits have been conducted annually since 2015 using IWA/AWWA methodology. These audits are intended to allow the City to better understand the relation between water loss and revenue losses. The methodology used in these audits was developed by the IWA Water Loss Task Force for universal application to any water distribution system. The IWA/AWWA audit methodology meets the requirements of SB 1420 signed into law in September 2014. Understanding and controlling water loss from a distribution system is an effective way for the City to achieve regulatory standards and manage their existing resources.

Unfortunately, due to a missing 2017 audit and significant discrepancies in the 2018 and 2019 audits[18], it was not possible to rely on the accuracy of three of the past five year's audits. Therefore, water losses (actually, non-revenue water) for all years shown in Table 4-4 were calculated based on the following equation:

- Total Annual Non-Revenue Water = (Total Production at the City's WTP) – (Distribution System Sales) +/- (Change in Volume of Treated Water Reservoir Storage During the Calendar Year)

The volume of water loss over the past five years (2015-2019 plus a sixth year, 2020), as quantified in Table 4-4, averaged 6.4 percent as a percent of total supply. Please note, that non-revenue water (as defined in Section 4.2.2) differs from water loss in that non-revenue water includes water losses plus any unbilled metered and unbilled unmetered water.

Table 4-4 Retail: Last Five Years of Water Loss (Non-Revenue Water) Reporting

Table 4-4 Retail: Last Five Years of Water Loss (Non-Revenue Water) Reporting			
Reporting Period	**Water Supplied**	**Volume of Water Loss**	**% Water Loss**
2015	7,117	476	6.7%
2016	7,322	604	8.2%
2017	7,370	281	3.8%
2018	7,753	569	7.3%
2019	7,363	449	6.1%
2020	7,580	473	6.2%
TOTAL 2015-2020	**44,505**	**2,852**	**6.4%**

[18] As noted, the Water Loss Audit for 2017 is missing and the audits filed in 2018 and 2019 contain unreasonably high water loss estimates (34.1% and 26.4% in 2018 and 2019, respectively). As noted under the "Comments" tab in the 2018 and 2019 audit reports, the very high water loss estimates may have been due to a City-wide meter replacement program during those two years, which impacted the quality of data collected and thereby significantly skewed the results. It was therefore deemed prudent for the sake of consistency and accuracy, not to rely on the water loss audit data in this UWMP but instead calculate losses (non-revenue water) as explained above. Nevertheless, to comply with DWR requirements, copies of all Water Loss audits for the years 2015, 2016, 2018, and 2019 are included in Appendix G, including the erroneous audits filed in 2018 and 2019.

Table 4-5 Retail: Inclusion in Water Use Projections

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections?	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc., utilized in demand projections are found.	Chapter 9, Section 9.1 of the 2020 UWMP
Are Lower Income Residential Demands Included in Projections?	Yes

4.5 Water Use for Lower Income Households

The UWMP Act requires retail water suppliers to include water use projections for single-family and multi-family residential housing for lower income and affordable households. Identifying these needs will assist the City in complying with the requirement under Government Code Section 65589.7 granting priority for providing water service to lower income households. SCAG has defined lower income households as earning below 80 percent of the median household income (MHI) for the County. MHI is also sometimes referred to as HAMFI (Housing Urban Development Area Median Family Income) or simply as AMI (Area Median Income). These terms were originally developed by the US Department of Housing and Urban Development.

For planning and funding purposes, the State Department of Housing and Community Development (HCD) categorizes households into the following five income groups based on the County Area Median Income (AMI):

- Extremely Low Income – up to 30 percent of AMI
- Very Low Income – 31 to 50 percent of AMI
- Low Income – 51 to 80 percent of AMI
- Moderate Income – 81 to 120 percent of AMI
- Above Moderate Income – Greater than 120 percent of AMI

Combined, extremely low, very low, and low income households are often referred to as lower income households.

State Housing Element law requires that a local jurisdiction accommodate a share of the region's projected housing needs for the planning period. This share, called the Regional Housing Needs Allocation (RHNA), is important because State law mandates that a jurisdiction provide sufficient land to accommodate a variety of housing opportunities for all economic segments of the community. Compliance with this requirement is measured by the jurisdiction's ability in providing adequate land with adequate density and appropriate development standards to accommodate the RHNA. As the regional planning agency, SCAG is responsible for allocating the RHNA to individual jurisdictions within the region.

The Regional Housing Needs Assessment (RHNA) assists jurisdictions in updating their General Plan Housing Elements. The RHNA identifies housing needs and assesses households by income level using several major data sources including 2010 Census, 2013-2017 American Community Survey, California

Department of Finance (DOF), California Employment Development Department (EDD), existing and General Plan Land Use Element, and SCAG growth forecasts. The sixth cycle of the RHNA covers the planning period of October 2021 to October 2029. SCAG approved and adopted the 6th Cycle Final RHNA Plan on March 4, 2021. The California Department of Housing and Community Development concluded the housing elements and data submitted by jurisdictions in the SCAG region met statutory requirements for the assessment of current housing needs and approved the plan on March 22, 2021.

Table 4-6A presents the household distribution within the City of El Centro based on AMI. The data indicates 50.5% of the City's housing falls within the three lower income categories.

Table 4-6 A: Household Distribution Based on Area Median Income (AMI)

Table 4-6 A: Household Distribution Based on Area Median Income (AMI)				
Income Categories	**SCAG 2020 Data[19]**	**SCAG 2021 Adopted RHNA Data[20]**	**% Change from 2020 to 2021**	**Revised Figures Adjusted for Differences in 2020 vs. 2021 Data**
Extremely Low Income (< 30% of AMI)	2,180	NA	---	2,474
Very Low Income (< 50% of AMI)	2,053	NA	---	2,330
Low Income (50%-80% of AMI)	1,970	NA	---	2,236
Moderate Income (80% - 120% of AMI)	1,014	NA	---	1,150
Above Moderate Income (> 120% of AMI)	5,065	NA	---	5,748
Total Households	**12,282**	**13,938**	**+13.5%**	**13,948**

As a point of interest, SCAG assigned 3,442 housing units in the City of El Centro as part of its final 6th Cycle RHNA allocation for the 2021-2029 planning period.[21] Of these designated units, 1,491 or 43.3% were Low Income units.

Table 4-6B provides the projected water needs for lower income single family and multifamily residential units. The projected water demands shown here represent 50.5 percent of the total projected water demand for the single-family and multifamily categories provided in Table 4-2. For example, the total lower income single-family residential demand is projected to be 2,147 AFY in 2025 and 2,424 AFY in 2045.

[19] Per SCAG's August 2020 Pre-Certified Local Housing Data Report for the City of El Centro – https://scag.ca.gov/sites/main/files/file-attachments/elcentro_he_0920.pdf?1603167296 (refer to page 14 of 18)

[20] Per SCAG Final RHNA Methodology Data Appendix, adopted by the SCAG Regional Council on March 5, 2020 - https://scag.ca.gov/sites/main/files/file-attachments/scag-final-rhna-data-appendix-030520.pdf?1602189406 (refer to third page of the 240 page file)

[21] Per SCAG's 6th Cycle RHNA adopted on March 4, 2021 and approved by CA DCH on March 22, 2021 - https://scag.ca.gov/sites/main/files/file-attachments/6th-cycle-rhna-final-allocation-plan.pdf?1616462966

Table 4-6 B: Projected Water Demands for Lower Income Households (AF)

Table 4-6 B: Projected Water Demands for Lower Income Households (AF)					
Water Use Sector	**Fiscal Year Ending**				
	2025	**2030**	**2035**	**2040**	**2045**
Total Residential Demand	5,185	5,274	5,340	5,596	5,854
SF Residential Demand-Lower Income Households	2,147	2,184	2,211	2,317	2,424
MF Residential Demand-Lower Income Households	471	479	485	509	532
Total Lower Income Household Demand	**2,618**	**2,663**	**2,696**	**2,826**	**2,956**

4.6 Climate Change Considerations

Changing climate patterns are expected to shift precipitation patterns and affect water supply. Unpredictable weather patterns will make water supply planning more challenging. The areas of concern for California include a reduction in Sierra Nevada Mountain snowpack, increased intensity and frequency of extreme weather events, and rising sea levels causing increased risk of Delta levee failure, seawater intrusion of coastal groundwater basins, and potential cutbacks on the SWP and Central Valley Project (CVP). The major impact in California is that without additional surface storage, the earlier and heavier runoff (rather than snowpack retaining water in storage in the mountains), will result in more water being lost to the ocean. A heavy emphasis on storage is needed in the State of California.

Given the City of El Centro imports 100% of its water supply from IID and the Colorado River, the future impacts of climate change on the Colorado River Basin are of more concern to the City than the SWP or the CVP water supply infrastructure. Colorado River Basin supplies have been inconsistent since about the year 2000 with the U.S. Bureau of Reclamation estimating the 19-year period from 2000 to 2018 was the driest period in more than 100 years of record keeping. Climate models are predicting a continuation of this pattern whereby hotter and drier weather conditions will result in continuing lower runoff.

An article published by AZCentral.com on February 22, 2020[22] cited new research showing the Colorado River is so sensitive to warming that it could lose about one-fourth of its flow by 2050 if temperatures continue to climb. The article went on to note that scientists with the U.S. Geological Survey found that the loss of snowpack due to higher temperatures plays a major role in driving the trend of the river's dwindling flow. They estimated that warmer temperatures were behind about half of the 16% decline in the river's flow during the stretch of drought years from 2000-2017, a drop that has forced Western states to adopt plans to boost the Colorado's water-starved reservoirs. Without changes in precipitation, the researchers said, for each additional 1 degree C (1.8 degrees F) of warming, the Colorado River's average flow is likely to drop by about 9%. The USGS scientists considered two scenarios of climate change. In one, warmer

[22] Source: https://www.azcentral.com/story/news/local/arizona-environment/2020/02/22/global-warming-rising-temperatures-worsening-toll-colorado-river-climate-change/4832434002/

temperatures by 2050 would reduce the amount of water flowing in the river by 14-26%. In the other scenario, warming would take away 19-31% of the river's flow.

Similarly, a lengthy article published by the Water Education Foundation in December 2017[23] noted, "As climate change causes air temperatures to increase, more water evaporates, and soils dry out. This means less water reaches the river when the rain does arrive. Among their findings, the two scientists wrote that between 2000 and 2014 the Colorado River's flows declined to only 81 percent of the 20th century average, a reduction of about 2.9 million acre-feet of water per year. As much as one-half of that reduction can be attributed to the higher temperatures since 2000, the report said."

As noted in El Centro's 2015 UWMP, the 2012 Imperial Integrated Regional Water Management Plan cited climate change predictions for the Imperial Region that were derived by analyzing global climate model (GCM) simulations of past and future climate. Six future climatologies of precipitation, temperature, wind, and evapotranspiration in Imperial Region were analyzed to assess the magnitude of predicted climate change. The six climatologies are comprised of three different future greenhouse gas emission scenarios that were simulated using two different GCMs.

The GCM Model results for the Imperial Region indicate more variation in magnitude of future changes between the two GCMs, than among future emission scenarios. Thus, future climate studies should focus on using more GCMs to capture a full range of variability. All climate model runs predict increases in temperature, with greater increases in minimum temperatures (2 percent to 14 percent) than in maximum temperatures (1 percent to 5 percent). The largest predicted increases in minimum temperatures occur in winter and fall. Seasonal patterns of increase in maximum temperature are less consistent across model runs.

The narrowing of the range of daily temperatures impacts both wind speed and evapotranspiration. Predicted changes in wind range from decreases of 3 percent to increases of 2 percent. While most model runs predicted small increases of less than 4 percent in evapotranspiration, a few predict evapotranspiration decreases, likely due to decreases in wind speed. However, all model runs consistently predict higher evapotranspiration rates in summer.

The predicted warming will impact crop development and water use, since plants have different water requirements at each growth stage. Growing degree day (GDD) is used as the primary measure for assessing plant development under the influence of heat. GDD is computed by summing mean daily temperatures in excess of 46°F, up to a daily temperature maximum of 90°F. GDD is accumulated from the beginning of the season and is used to predict key growth benchmarks such as flowering and maturity. The analysis shows an increase in the GDD for all seasons with large increases of up to 19 percent in winter and spring by 2050. The results indicate that crop water use is likely to increase if cropping patterns remain unchanged.

Predictions of change in precipitation are less consistent across the six model runs with the largest inconsistencies occurring for fall and summer. Predicted changes in summer rainfall vary between -12 percent and +24 percent while fall rainfall changes of -21 percent to +28 percent are predicted. However, a majority of model runs predict winter precipitation to increase between 3 percent and 19 percent while spring precipitation is predicted to decrease from 15 percent to 30 percent.

[23] Source: River Report Examines Climate Change Impact on Colorado River Basin - Water Education Foundation

While the predicted changes would make for improved winter growing conditions with warmer temperatures, the shift from spring to winter precipitation increases the chances of precipitation during the winter harvest season could damage crops just prior to harvest. Excessive summer heat could lead to seed germination problems, sunburn, and lower yields. Increased temperatures throughout the year could lead to alterations in crop growth and water use patterns. Hotter summers could also increase water demand and power consumption for domestic and industrial cooling with associated increases in power generation emissions.

Farmers are sure to respond to weather changes that impact quality and economic value of crop yields; their response may include changing cropping calendars, type and amount of crop planted, etc. These changes would in turn impact water consumption patterns. However, with its 24/7 delivery schedule, these types of changes in demand patterns can be accommodated by IID.

Increases in the amount of evaporation associated with increased temperatures would increase crop water requirements. This could cause demand to outstrip supply, resulting in increased overruns and/or more frequent declarations of a Supply and Demand Imbalance (SDI) under the IID Equitable Distribution Plan (EDP). Increased evapotranspiration could also accelerate habitat loss in the marshes and increase the rate of decline in Salton Sea elevation and salt concentration.

The Imperial Region obtains its water supply from the Colorado River which flows from the upper basin states (Colorado, Wyoming, and Utah), through the lower basin states (Arizona, Nevada, and California) before entering Mexico on its way to the Gulf of California. Under the Law of the River, Colorado River water supply imported by IID is quite secure and reliable because of the seniority of the IID water rights.

Water deficits must exceed the upper Colorado River Basin states' allocation before lower states' apportionment (and hence IID) are reduced. Also, the large volume of available reservoir storage on the Colorado River in Lake Mead and Powell buffer the potential climate change effects related to timing of flows that might occur if there were to be changes in the ratio of snow to rainfall. A reduction in the volume of water available is not envisioned even under the most extreme climate scenarios.

Due to IID's historic water rights, reductions in Colorado River water supply would be absorbed by junior water rights holders prior to effecting IID's supply and the Imperial Region. Consequently, climate change poses a limited direct threat to the volume or timing of IID and Imperial Region water supply from the Colorado River.

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5 SBX7-7 BASELINES AND TARGETS

The Water Conservation Act of 2009, also known as Senate Bill (SB)x7-7, signed into law on February 3, 2010, required water purveyors in the State of California to reduce urban water use by 20 percent by the year 2020 with an interim reduction of 10% by 2015. To comply with this requirement, the City had to determine baseline water use during their baseline period and water use targets for the years 2015 and 2020 to meet the State's water reduction goals. The City had the option of choosing to comply with SBx7-7 individually or as a region in collaboration with other retail water suppliers in Imperial County. Under the regional compliance option, the City would still be required to report its individual water use targets. The City must either comply with SBx7-7 individually or as part of a regional alliance, or demonstrate it has a plan or has secured funding to be in compliance to be eligible for water-related State grants and loans on and after July 16, 2016.

In the 2015 UWMP, the City demonstrated compliance with its 2015 water use target, thus indicating it was on track to meeting the 2020 water use target. The City also revised their baseline per capita water use calculations using 2010 U.S. Census data in the 2015 UWMP. Changes in the baseline calculations also resulted in updated per capita water use targets. This 2020 UWMP will demonstrate compliance with the final 2020 water use target established in the 2015 UWMP.

DWR also requires the submittal of a SBx7-7 Compliance Form as part of this 2020 UWMP. These forms are included in Appendix F and consist of a set of standardized tables used to demonstrate compliance with the Water Conservation Act.

5.1 Baseline Water Use

The baseline water use is the City's gross water use divided by its service area population, reported in gallons per capita per day (GPCD). Gross water use is a measure of water that enters the distribution system of the supplier over a 12-month period with certain allowable exclusions. While none of these exclusions apply to the City of El Centro, they are noted below for the record:

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

Water suppliers must report baseline water use for two baseline periods, the 10- to 15-year baseline (baseline GPCD) and the five-year baseline (target confirmation) as described below.

5.1.1 Ten- to Fifteen-Year Baseline Period (Baseline GPCD)

The first step to calculating the City's water use targets is to determine its base daily per capita water use (baseline water use). This baseline water use is essentially the City's gross water use divided by its service area population, reported in GPCD. The baseline water use is calculated as a continuous (rolling) 10-year average during a period, which ends no earlier than December 31, 2004 and no later than December 31,

2010. Water suppliers whose recycled water made up 10 percent or more of their 2008 retail water delivery can use up to a 15-year average for the calculation. However, because El Centro has never delivered recycled water within its service area, the City is required to use a 10-year baseline period in lieu of the longer 15-year period.

The most advantageous sequence of years for calculating per-capita water use is the sequence that generates the highest per-capita water use, thus making subsequent water conservation easier to achieve. Accordingly, the 10-year period from January 2001 through December 2010, which was selected as the average per-capita water use baseline in both the City's 2010 and 2015 UWMPs and is used in this 2020 UWMP. The baseline per capita water use for this 10-year period is 201 GPCD as shown in Table 5.1A.

5.1.2 Five-Year Baseline Period (Target Confirmation)

Water suppliers are required to calculate water use, in GPCD, for a five-year baseline period. This number is used to confirm that the selected 2020 target meets the minimum water use reduction requirements. Regardless of the compliance option adopted by the City, it will need to meet a minimum water use target of 5 percent reduction from the five-year baseline water use as set forth in Section 10608.22 of SBx7-7. This five-year baseline water use is calculated as a continuous five-year average during a period, which ends no earlier than December 31, 2007 and no later than December 31, 2010.

The baseline per capita water use for the five year period from January 2003 through December 2007 is 209 GPCD. This minimum baseline period was selected in both the City's 2010 and 2015 UWMPs and is used in this 2020 UWMP.

5.1.3 Service Area Population

The City's water service area boundaries correspond exactly with the City boundaries and all 10,458 water service connections are located within the City. This allows the City to use the population estimates prepared by DOF for the City of El Centro.

5.2 SBx7-7 Water Use Targets

In the 2020 UWMP, the City may update its 2020 water use target by selecting a different target method than what was used in 2015. The target methods and determination of the 2020 target are described below.

5.2.1 SBx7-7 Target Methods

DWR has established four target calculation methods from which urban retail water suppliers can choose. The City is required to adopt one of the four methods to comply with SBx7-7 requirements. These methods are described below:

- Method 1: Requires a simple 20 percent reduction from the baseline by 2020 (with 10 percent by 2015).
- Method 2: Employs a budget-based approach by requiring an agency to achieve a performance standard based on the following three metrics:
    - Residential indoor water use of 55 GPCD;

- Landscape water use commensurate with the State Model Water Efficient Landscape Ordinance; and
- A 10 percent reduction in baseline CII water use

- Method 3: Achieves 95 percent of the applicable state hydrologic region target as set forth in the State's 20x2020 Water Conservation Plan.
- Method 4: Requires the subtraction of Total Savings from the baseline GPCD:
  - Total savings includes meter savings, indoor residential savings, CII savings, and landscape and water loss savings.

5.2.2 2020 Target

The City selected to comply with Method 3, consistent with the 2015 UWMP. The City of El Centro falls within the Colorado River Hydrologic Region. According to the State's 20x2020 Water Conservation Plan, the 2020 Target for this hydrologic region is 211 GPCD[24]. Using Method 3, the City's 2020 water use target would be 200.5 GPCD (95% of 211). This was greater than the minimum 2020 SBx7-7 target allowed for the City by DWR equal to 95% of the five-year baseline (95% of 208.6, or 198.2 GPCD). Therefore, the minimum allowable 2020 SBx7-7 target of 198.2 GPCD was substituted as the Method 3 2020 target. The SB x7-7 Verification Form, establishing the 2020 target value, was submitted with the 2015 UWMP (refer to Appendix B of this UWMP). The baseline and target values provided in the SB x7-7 Verification Form are included in Table 5-1.

Table 5-1: Baselines and Summary

Table 5-1: Baselines and Targets Summary *Retail Supplier*				
Baseline Period	**Start Year**	**End Year**	**Average Baseline in GPCD**	**Confirmed 2020 Target in GPCD**
10-15 year	2001	2010	201	198.2
5 Year	2003	2007	209	

Table 5-2 compares the City's 2020 water use target to its actual 2020 consumption. The per capita usage (148 GPCD) was derived from DWR's Final SBx7-7 Compliance Tables, which is based on population data from Table 3-1 and water usage data from Table 4-1B. Based on this comparison of actual per capita usage (148 GPCD) vs. the City's Confirmed Target GPCD (198.2), El Centro is in compliance with the 2020 water use target.

[24] Source: https://www.waterboards.ca.gov/water_issues/hot_topics/20x2020/docs/20x2020plan.pdf (refer to page 28)

Table 5-2: 2020 Compliance

Submittal Table 5-2: 2020 Compliance From SB X7-7 2020 Compliance Form *Retail Supplier or Regional Alliance Only*				
2020 GPCD			2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD	2020 TOTAL Adjustments GPCD	Adjusted 2020 GPCD *(Adjusted if applicable)*		
148	**0**	**0**	**198.2**	**Yes**

5.3 Regional Alliance

A retail supplier may choose to meet the SBx7-7 targets on its own, i.e., individually, or as part of a regional alliance formed with other retail suppliers. The City of El Centro is not participating in a regional alliance and is submitting its 2020 UWMP individually.

6 WATER SOURCES AND SUPPLY RELIABILITY

Surface water imported from the Colorado River by IID is the primary water supply for the Imperial Region and the sole water supply for the City of El Centro. Colorado River water is used to meet all current agricultural and non-agricultural water demands in the IID water service area.

Rainfall is less than three inches per year and does not contribute to IID water delivery, although at times it does increase or reduce agricultural water demand. Groundwater in the Imperial Valley is of poor quality and is generally unsuitable for domestic or irrigation purposes, though some is pumped for industrial (geothermal) use.

6.1 Purchased Imported Water

All water supply for the City of El Centro is imported Colorado River water purchased from IID. Approximately 97 percent of IID imported Colorado River water is used for agriculture in the Imperial Valley.[25] However, non-agricultural water use is projected to increase as municipal water demand continues to rise due to population growth; as industrial (renewable energy) water demand increases due to increased geothermal energy production; and as feedlot, dairy, fishery, environmental and recreation uses all continue to increase.

6.1.1 Colorado River Rights

IID's rights to appropriate Colorado River water are long-standing and the District holds legal title to all of its water and water rights in trust for landowners within the District.[26] Beginning in 1885, a number of individuals, as well as the California Development Company, made a series of appropriations of Colorado River water under California law for use in the Imperial Valley. Pursuant to then-existing California laws, these appropriations were initiated by the posting of public notices for approximately 7 million acre-feet per year (MAFY) at the point of diversion and recording such notices in the office of the county recorder.

The individual appropriations were subsequently assigned to the California Development Company, whose entire assets, including its water rights, were later bought by the Southern Pacific Company. On June 22, 1916, the Southern Pacific Company conveyed all its water rights to IID.

IID's predecessor water right holder made reasonable progress in putting its pre-1914 appropriative water rights to beneficial use. By 1929, the beneficial use was 424,145 acres out of the Imperial Valley's approximately one million irrigable acres.

Colorado River water rights are governed by numerous compacts, state and federal laws, court decisions and decrees, contracts, and regulatory guidelines collectively known as the "Law of the River." Together, these documents allocate the water, regulate land use, and manage the Colorado River water supply among the seven basin states and Mexico. The following legal and regulatory documents are among those that have significant bearing on IID.

[25] Source: https://www.iid.com/water#:~:text=Of%20the%20water%20IID%20transports,top%2010%20agricultural%20regions%20nationwide
[26] CWC §20529 and §22437; *Bryant v. Yellen*, 447 U.S. 352, 371 (1980), fn.23 - https://www.loc.gov/item/usrep447352/

6.1.1.1 Colorado River Compact (1921)

With the authorization of their legislatures and at the urging of the federal government, representatives from the seven Colorado River basin states began negotiations regarding the distribution of water from the Colorado River in 1921. In November 1922, an interstate agreement, the Colorado River Compact, was signed by the representatives giving each basin perpetual rights to annual apportionments of 7.5 MAFY of Colorado River water. Arizona signed the Compact in 1922 but did not ratify it until 1944. Even after they ratified the Compact, they pursued litigation against the State of California, which eventually resulted in the United States Supreme Court granting Arizona 46% of the water in the Colorado River Basin (see Arizona v. California US Supreme Court Decision (1964, 1979) in Section 6.1.1.4.)

The seven basin states (Wyoming, Colorado, Utah, Nevada, New Mexico, Arizona, California and Mexico) as well as the geographic location of the Upper and Lower Colorado River Basins are depicted in Figure 6-1.[27]

6.1.1.2 Boulder Canyon Project Act (1928)

California was apportioned 4.4 MAFY out of the lower basin allocation of 7.5 MAFY, plus 50 percent of any available surplus water as a result of the Boulder Canyon Project Act, which Congress authorized in 1928, the California Limitation Act, and the Secretary's contracts with the California water users.

The Secretary entered into contracts with California right holders to further apportion California's share of Colorado River water and entered into a permanent service water delivery contract with IID on December 1, 1932. The District undertook to pay the cost of the works (Imperial Dam and the All-American Canal) and to include within itself certain public lands of the United States and other specific lands. The United States undertook to deliver to the Imperial Dam the water that would be carried by the new canal to the various lands to be served by it. IID's contract with the Secretary incorporated the provisions of the Seven-Party Agreement. IID's contract has no termination date. It is a contract for permanent water service.

6.1.1.3 California Seven-Party Agreement (1931)

On November 5, 1930, the Secretary of the Interior requested the California Division of Water Resources to recommend a proper method of apportioning the water that California was entitled to receive under the 1922 Colorado River Compact and the Boulder Canyon Project Act. Thereafter, a number of users and prospective users of Colorado River water entered into the Seven-Party Agreement on August 18, 1931. As a result of the Seven-Party Agreement, IID agreed to limit its California pre-1914 appropriative water rights in quantity and priority to the apportionments and priorities contained in the Seven-Party Agreement. The California Seven-Party Agreement (condensed and summarized in Table 6-0A) states:

> *"The Division of Water Resources to, in all respects, recognize said apportionments and priorities in all matters relating to State authority and to recommend the [apportionment and priority provisions] to the Secretary of the Interior of the United States for insertion in any and all contracts for water made by him (sic) pursuant to the terms of the Boulder Canyon Project Act."*

[27] Source: https://www.usbr.gov/lc/region/programs/crbstudy/finalreport/index.html

Figure 6-1: Colorado River Basin States

Table 6-0 A: Seven-Party Agreement for Apportionments and Priorities

Table 6-0 A: Seven-Party Agreement for Apportionments and Priorities[28]			
Priority Order	**Description**	**Annual Apportionment (Acre-feet)**	**Annual Present Perfected Rights (PPRs) (Acre-feet)**
1	Palo Verde Irrigation District – for use exclusively on a gross area of 104,500 acres of land within and adjoining the district	3,850,000	**219,790** (or consumptive use for 33,604 acres)
2	Yuma Project (Reservation District) – for use on California Division, not exceeding 25,000 acres of land		**38,270** (or consumptive use for 6,294 acres)
3a	Imperial Irrigation District - for use on lands served by All-American Canal in Imperial and Coachella Valleys		**2,600,000** (or consumptive use for 424,145 acres) - (IID only)
3b	Palo Verde Irrigation District – for use exclusively on an additional 16,000 acres of mesa lands		
4	Metropolitan Water District and/or City of Los Angeles and/or others – for use by themselves and/or others on Southern California coastal plain	550,000	
	Subtotal	**4,400,000**	
5a	Metropolitan Water District and/or City of Los Angeles and/or others on coastal plain	550,000	
5b	City and County of San Diego	112,000	
6a	Imperial Irrigation District - lands served by the All-American Canal (AAC) in Imperial and Coachella Valleys	300,000	
6b	Palo Verde Irrigation District – for exclusive use on 16,000 acres of mesa lands		
	Total	**5,362,000**	
7	California Agricultural Use - Colorado River Basin lands in California	All remaining available water	

6.1.2 IID State Applications and Permits

Following execution of the Seven-Party Agreement, IID filed eight applications with the California Division of Water Rights between 1933 and 1936 to appropriate water pursuant to the California Water Commission Act. These applications each reserved the pre-1914 appropriative rights. However, the applications also incorporated the terms of the Seven-Party Agreement (Table 6-0A), including the priority and apportionment parameters into IID's California appropriative applications. Permits were granted on the applications in 1950.

6.1.3 Subordination by Coachella Valley Water District

Coachella Valley Water District (CVWD) was formed in 1918 to protect and conserve local water sources. At the time IID entered into its contract with the Secretary of the Interior, it was anticipated the lands to be served with Colorado River water in the Coachella Valley to the north would also become a part of IID. However, Coachella farmers eventually decided they preferred to have their own delivery contract with the

[28] Source: https://www.iid.com/home/showpublisheddocument?id=16799 (refer to page 45)

Secretary, and an action was brought by the CVWD to protest IID's court validation of the 1932 IID water service and repayment contract with the Secretary of the Interior.

In 1934, IID and CVWD executed a compromise agreement that paved the way for CVWD to have its own contract with the Secretary, and which provided that CVWD would subordinate its Colorado River entitlement, in perpetuity, to IID's entitlement. That is, within the third, sixth, and seventh priority order (Table 6-0 A), as set forth in the Seven-Party Agreement and California water delivery contracts, IID water use takes precedence over CVWD use. As a practical matter, under Priority 3, CVWD receives what is left of 3.85 MAFY after Palo Verde Irrigation District, Yuma Project, and IID uses are deducted.

In summary, when California is limited to 4.4 MAFY of Colorado River water, IID has senior water rights established under state law in the amount of 3.85 MAFY minus the amounts used by Priorities 1 and 2.

6.2 IID Present Perfected Rights, and Arizona v. California US Supreme Court Decision (1964, 1979)

The term "present perfected rights" first appeared in the Colorado River Compact executed on November 24, 1922. The Compact provided that present perfected rights to the beneficial use of waters of the Colorado River system are unimpaired by this Compact. The Boulder Canyon Project Act, Section 6, effective on June 25, 1929, recognized and protected these rights by providing, "the dam and reservoir ... shall be used; second, for irrigation and domestic uses and satisfaction of present perfected rights in pursuance of Article VIII of said Colorado River Compact ..." Pursuant to the terms of the Boulder Canyon Project Act, California's 4.4 MAFY of mainstream water was to be used to satisfy "any rights which existed on December 21, 1928." Such rights included present perfected rights within IID's pre-1914 state-law appropriative rights.

The 1964 Supreme Court decision settled a 25-year disagreement between Arizona and California that stemmed from Arizona's desire to build the Central Arizona Project to enable use of its full apportionment. California's argument was that as Arizona used water from the Gila River, which is a Colorado River tributary, it was using a portion of its annual Colorado River apportionment. An additional argument from California was that it had developed a historical use of some of Arizona's apportionment, which, under the doctrine of prior appropriation, precluded Arizona from developing the project. California's arguments were rejected by the U.S. Supreme Court. Under direction of the Supreme Court, the Secretary was restricted from delivering water outside of the framework of apportionments defined by law. Preparation of annual reports documenting consumptive use of water in the three lower basin states was also mandated by the Supreme Court.

Although the United States Supreme Court in Arizona v. California defined "perfected right" and "present perfected rights" in its 1964 Decree, IID's present perfected rights were not quantified until the Supreme Court issued a Supplemental Decree in 1979. That Supplemental Decree defined IID's present perfected rights as a right to Colorado River water: "In annual quantities not to exceed (i) 2,600,000 acre-feet of diversions from the mainstream or (ii) the consumptive use required for irrigation of 424,145 acres and for the satisfaction of related uses, whichever of (i) or (ii) is less, with a priority date of 1901."

IID's present perfected rights are very important because Article II(B)(3) of the Supreme Court Decree provides that in any year in which there is less than 7.5 MAF of mainstream water available for release for consumptive use in Arizona, California, and Nevada, the Secretary of the Interior shall first provide for the

satisfaction of present perfected rights in the order of their priority dates without regard to state lines before imposing shortage cutbacks on other junior water right holders.

6.2.1 Colorado River Basin Project Act (1968)

In 1968, Congress authorized various water development projects in both the upper and lower basins, including the Central Arizona Project (CAP). Under the Colorado River Basin Act of 1968, priority was given to California's apportionment over the CAP water supply in times of shortage. Also, under the act, the Secretary was directed to prepare long-range criteria for the Colorado River reservoir system in consultation with the Colorado River Basin states.

6.2.2 Quantification Settlement Agreement & Related Agreements (2003)

With completion of a large portion of the Central Arizona Project (CAP) infrastructure in 1994, creation of the Arizona Water Banking Authority in 1996, and the growth of Las Vegas in the 1990s, California encountered increasing pressure to live within its Priority 1-4 rights of 4.4 MAFY under the Law of the River. After years of negotiating among Colorado River Compact States and affected California water delivery agencies, the Quantification Settlement Agreement (QSA) and Related Agreements and associated documents (QSA/Transfer Agreements) were signed by the Secretary of Interior, IID, CVWD, Metropolitan Water District of Southern California (MWDSC, MWD or Metropolitan), the San Diego County Water Authority (SDCWA), and other affected parties on October 10, 2003.

The Quantification Settlement Agreement and Related Agreements (QSA/Transfer Agreements) are a set of interrelated contracts that resolve certain disputes among the United States, the State of California, IID, MWD, CVWD and SDCWA, for a period of 35 to 75 years, regarding the reasonable and beneficial use of Colorado River water; the ability to conserve, transfer and acquire conserved Colorado River water; the quantification and priority of Priorities 3(a) and 6(a)[29] within California for use of Colorado River water; and the obligation to implement and fund environmental impact mitigation.

Conserved water transfer agreements between IID and SDCWA, IID and CVWD, and IID and MWD are all part of the QSA/Transfer Agreements. For IID, these contracts identify conserved water volumes and establish transfer schedules along with price and payment terms. As specified in the agreements, IID will transfer nearly 415,000 AF annually over a 35-year period (or longer), as follows:

- to MWD 110,000 AF [modified to 105,000 AF in 2007],
- to SDCWA 200,000 AF,
- to CVWD and MWD combined 103,000 AF, and
- to certain San Luis Rey Indian Tribes 11,500 AFY of water.

All of the conserved water will ultimately come from IID system and on-farm efficiency conservation improvements. In the interim, IID has implemented a Fallowing Program to generate water associated with

[29] 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 within the State of California and other existing surplus water contracts are not affected by the QSA Agreement.

Salton Sea mitigation related to the impacts of the IID/SDCWA water transfer, as required by the State Water Resources Control Board, which ran from 2003 through 2017. In return for its QSA/Transfer Agreements programs and deliveries, IID receives payments totaling billions of dollars to fund needed efficiency conservation measures and to pay growers for conserved on-farm water, so IID can transfer nearly 14.5 MAF of water without impacting local productivity. In addition, IID will transfer to SDCWA 67,700 AFY annually of water conserved from the lining of the AAC in exchange for payment of lining project costs and a grant to IID of certain rights to use the conserved water. In addition to the 105,000 acre-feet of water currently being conserved under the 1988 IID/MWD Conservation Program, these more recent agreements define an additional 303,000 AFY to be conserved by IID from on-farm and distribution system conservation projects for transfer to SDCWA, CVWD, and MWD.

6.2.2.1 Colorado River Water Delivery Agreement (CRWDA)[30]

As part of the 2003 QSA/Transfer Agreements among California and federal agencies, the CRWDA was entered into by the Secretary of the Interior, IID, CVWD, MWD and SDCWA. The CRWDA involves the federal government because of the change in place of Colorado River water from the All-American Canal to the Colorado River Aqueduct.

The CRWDA lays out how the California 4.4 Plan will be met by quantifying for a specific term of years deliveries of certain Colorado River entitlements within shared priorities, so that transfers may occur. In particular, for the term of the CRWDA, quantification of Priority 3(a) is effected through caps on consumptive use measured at Imperial Dam for IID (3.1 MAFY) and CVWD (330 KAFY). Quantification of Priority 6(a) is effected through quantifying consumptive use amounts to be made available in order of priority to MWD (38 KAFY), IID (63 KAFY), and CVWD (119 KAFY) with the provision that any additional water available to Priority 6(a) be delivered under IID and CVWD existing water delivery contracts with the Secretary. The CRWDA also provides a source of water to effect a San Luis Rey (SLR) Indian Water rights settlement. The CRWDA provides that the underlying water delivery contract with the Secretary remain in full force and effect. (Colorado River Documents 2008, pages 6-12 and 6-13).

Under the terms of the CRWDA, the Secretary of the Interior shall deliver IID's Priority 3(a) consumptive use entitlement pursuant to Exhibit A (Table 6-0B); and an annual water consumptive use limit is imposed on IID, pursuant to Exhibit B (Table 6-0C). Additionally, the CRWDA satisfies the 2001 Interim Surplus Guidelines requirement that a quantification settlement agreement be adopted as a prerequisite to an interim surplus determination by the Secretary.

[30] Source: 2003 CRWDA: Federal QSA. http://www.usbr.gov/lc/region/g4000/crwda/crwda.pdf

Table 6-0 B: Delivery of Priority 3(a) Consumptive Use Entitlement to IID (CRWDA Exhibit A)

Table 6-0 B: Delivery of Priority 3(a) Consumptive Use Entitlement to IID (CRWDA Exhibit A)		
Delivered to (Entity)	**At (Point of Diversion)**	**Amount Not-to-Exceed (AFY)**
CVWD	Imperial Dam	103,000
MWD [31, 32]	Lake Havasu	110,000[31]
SDCWA [33]	Lake Havasu	56,200
SDCWA[34]	Lake Havasu	200,000
SLR[35]	*See SLR note*	*See SLR note*
Misc. & Indian PPRs[36]	Current points of delivery	11,500
For benefit of MWD/SDCWA[37]	Lake Havasu	145,000
IID	Imperial Dam	Remainder
IID's Priority 3(a) Total		3,100,000

6.2.2.2 Inadvertent Overrun Payback Policy (IOPP)

The CRWDA Inadvertent Overrun Payback Policy (IOPP), adopted by the Secretary contemporaneously with the execution of the CRWDA, provides additional flexibility to Colorado River management and applies to entitlement holders in the Lower Division States.[38] The IOPP defines inadvertent overruns as "Colorado River water diverted, pumped, or received by an entitlement holder of the Lower Division States that is in excess of the water users' entitlement for the year." An entitlement holder is allowed a maximum overrun of 10 percent of its Colorado River water entitlement.

In the event of an overrun, the IOPP provides a mechanism to payback the overrun. When the Secretary has declared a normal year for Colorado River diversions, a contractor has from one to three years to pay back its obligation, with a minimum annual payback equal to 20 percent of the entitlement holder's maximum allowable cumulative overrun account or 33.3 percent of the total account balance, whichever is greater. However, when Lake Mead is below an elevation of 1125 feet on January 1, the terms of the IOPP require that the payment of the inadvertent overrun obligation be made in the calendar year after the overrun is imported in the USBR Lower Colorado Region Colorado River Accounting and Water Use Report [for] Arizona, California, and Nevada (Decree Accounting Report).[39]

[31] Agreement for Implementation of a Water Conservation Program and Use of Conserved Water dated Dec 22, 1988; Approval Agreement, dated Dec 19, 1989. Of amount identified: up to 90 KAFY to MWD and 20 KAFY to CVWD
[32] By IID/MWD agreement, the 1988 IID/MWD transfer was fixed at 105 KAFY, beginning with calendar year 2007.
[33] Water conserved from construction of a new lined canal parallel to the AAC from Pilot Knob to Drop 3.
[34] Agreement for Transfer of Conserved Water, dated Apr 29, 1998, as amended. As set forth in Exhibit B (Table 5-4), delivery amounts shall be 205 KAF in calendar year 2021 and 202.5 KAF in calendar year 2022.
[35] Water conserved from AAC lining and made available for benefit of SLR Parties under applicable provisions of PL 100-675, as amended. Quantity may vary, not to exceed 16 KAFY, as may point of diversion, subject to terms of Allocation Agreement.
[36] Water to be delivered to misc. and Indian PPRs identified in the Decree in AZ v. CA, as supplemented. Delivery of water will be to current points of delivery unless modified in accordance with applicable law.
[37] As provided in CRWDA subsection 4(g).
[38] Source: USBR. *2003 Colorado River Water Delivery Agreement ROD.* Section IX. Implementing the Decision A. Inadvertent Overrun and Payback Policy. Pages 16-19 of 34. http://www.usbr.gov/lc/region/g4000/crwda/crwda_rod.pdf . 7 Feb 2013.
[39] Source: 2003 ROD CRWDA IOPP: http://www.usbr.gov/lc/region/g4000/crwda/crwda_rod.pdf

Table 6-0 C: IID Net Consumptive Use Schedule 2003-2077 (KAF, CRWDA Ex. B)

Table 6-0 C: IID Net Consumptive Use Schedule 2003-2077 (KAF, CRWDA Exhibit B)[40]										
IID Quantification and Transfers, Volumes in KAF at Imperial Dam [41]										
Col 1	2	3	4	5	6	7	8	9	10	11
Year	IID Priority 3(a)	IID Reductions								IID Net Available for Consumptive Use (Col 2 - 10)
	IID Quantified Amount	1988 MWD Transfer[42]	SDCWA Transfer	AAC Lining	Salton Sea Mitigation SDCWA Transfer[43]	Intra-Priority 3 CVWD Transfer	MWD Transfer w\ Salton Sea Restoration[44]	Misc. PPRs	IID Total Reduction (Σ Cols 3-9)[45]	
2003	3,100	105.1	10.0	0.0	0.0	0.0	0.0	11.5	126.6	2,978.2
2004	3,100	101.9	20.0	0.0	15.0	0.0	0.0	11.5	148.4	2,743.9
2005	3,100	101.9	30.0	0.0	15.0	0.0	0.0	11.5	158.4	2,756.8
2006	3,100	101.2	40.0	0.0	20.0	0.0	0.0	11.5	172.7	2,909.7
2007	3,100	105.0	50.0	0.0	25.0	0.0	0.0	11.5	191.5	2,872.7
2008	3,100	105.0	50.0	8.9	26.0	4.0	0.0	11.5	205.4	2,825.1
2009	3,100	105.0	60.0	65.5	30.1	8.0	0.0	11.5	280.1	2,566.7
2010	3,100	105.0	70.0	67.7	33.8	12.0	0.0	11.5	294.8	2,540.5
2011	3,100	103.9	63.3	67.7	0.0	16.0	0.0	11.5	262.4	2,915.8
2012	3,100	104.1	106.7	67.7	15.2	21.0	0.0	11.5	326.2	2,903.2
2013	3,100	105,0	100.0	67.7	71.4	26.0	0.0	11.5	381.6	2,554.9
2014	3,100	104.1	100.0	67.7	89.2	31.0	0.0	11.5	403.5	2,533.4
2015	3,100	107.8	100.0	67.7	153.3	36.0	0.0	11.5	476.3	2,480.9
2016	3,100	105.0	100.0	67.7	130.8	41.0	0.0	11.5	456.0	2,504.3
2017	3,100	105.0	100.0	67.7	105.3	45.0	0.0	9.9	434.5	2,548.2
2018	3,100	105.0	130	67.7	0.1	63	0.0	11.5	377.3	2,722.8
2019[46]	3,100	105.0	160	67.7	46.55	68	0.0	11.5	458.8	2,687.8
2020	3,100	105.0	193	67.7	0.0	73	0.0	11.5	450.2	2,649.8
2021	3,100	105.0	205	67.7	0.0	78	0.0	11.5	467.2	2,632.8
2022	3,100	105.0	203	67.7	0.0	83	0.0	11.5	470.2	2,629.8
2023	3,100	105.0	200	67.7	0.0	88	0.0	11.5	472.2	2,627.8
2024	3,100	105.0	200	67.7	0.0	93	0.0	11.5	477.2	2,622.8
2025	3,100	105.0	200	67.7	0.0	98	0.0	11.5	482.2	2,617.8
2026	3,100	105.0	200	67.7	0.0	103	0.0	11.5	487.2	2,612.8
2027	3,100	105.0	200	67.7	0.0	103	0.0	11.5	487.2	2,612.8
2028	3,100	105.0	200	67.7	0.0	103	0.0	11.5	487.2	2,612.8
'29-37	3,100	105.0	200	67.7	0.0	103	0.0	11.5	487.2	2,612.8
'38-47[47]	3,100	105.0	200	67.7	0.0	103	0.0	11.5	487.2	2,612.8
'48-77[48]	3,100	105.0	200	67.7	0.0	50[49]	0.0	11.5	434.2	2,665.8

[40] Source: CRWDA: Federal QSA Exhibit B, p 13; updated values from 2019 QSA Implementation Report
[41] 2003 through 2020 volumes are adjusted for actual USBR Decree Accounting values; IID Total Reduction and Net Available for Consumptive Use may not equal Col 2 minus Col 10, if IID conservation/use was not included in Exhibit B
[42] 2014 Letter of Agreement provides that, effective January 2016 total amount of conserved water available is 105 KAFY
[43] Salton Sea Mitigation volumes may vary based on conservation volumes and method of conservation.
[44] This transfer is not likely given lack of progress on Salton Sea restoration as of 2018; shared entries represent volumes that may vary.
[45] Reductions include conservation for 1988 IID/MWD Transfer, IID/SDCWA Transfer, AAC Lining; SDCWA Transfer Mitigation, MWD Transfer w/Salton Sea Restoration (if any), and Misc. PPRs. Amounts are independent of increases and reductions as allowed by IOPP.
[46] In order, to resolve the outstanding 2010 Salton Sea mitigation water pre-delivery issue, IID left 46,546 AF of extraordinary conservation in Lake Mead. See IID's December 19, 2019 water order and Reclamation's March 10, 2020 approval letter.
[47] Assumes SDCWA does not elect termination in year 35.
[48] Assumes SDCWA and IID mutually consent to renewal term of 30 years.
[49] Modified from 100 KAFY shown in CRWDA Exhibit B; starting in 2018 MWD will provide CVWD 50 KAFY of the 100 KAFY.

6.2.2.3 Impacts on Water Supply

The annual water consumptive use limit imposed by CRWDA Exhibit B (Table 6-0C) creates complicated accounting for both IID and USBR and is still evolving. The record included herein represents IID efforts to consolidate USBR and IID numbers. As IID works with USBR to develop consolidated accounting formats, the presentation of these values is likely to be refined and updated. The 3.1 MAFY cap and the water efficiency conservation and transfer programs present unique challenges as data prior to 2003 cannot always be compared or averaged with QSA/Transfer Agreements data absent additional data rectification or benchmarking.

As a result of the QSA/Transfer Agreements, IID will be able to more efficiently deliver Colorado River water to the Imperial Valley. Imperial Valley agricultural water users will also be able to use their irrigation water more efficiently, thus, preserving Imperial Valley agricultural output while reducing their use of Colorado River water. The voluntary on-farm efficiency conservation program will financially compensate participants for the water they conserve. USBR will not challenge reasonable and beneficial use under the 43 C.F.R. Part 417 as long as IID participates in the QSA/Transfer Agreements; thus, the Imperial Valley will be able to rely on the senior rights to a large volume of Colorado River water that IID possesses.

In short, the QSA/Transfer Agreements ensure that IID will receive Colorado River water as scheduled in CRWDA Exhibit B (Table 6-0C) and provide the means to allow IID and the customers it serves to elevate their Colorado River water use to efficient 21st Century standards and ensure the continued availability of this precious supply, while meeting delivery obligations as shown in Table 6-0D.

The impact of the QSA/Transfer Agreements on the Region's water supply is a limitation of the amount of Colorado River water available for delivery by IID to its customers. IID has agreed to 45 years of large-scale water conservation and transfer, increasing from 120,000 AFY in 2003, to 408,000 AFY in year 24 (2026). From 2026 through 2047, the IID reduction is stabilized at 408,000 AFY. The conserved amounts are to be delivered to urban areas in California's Colorado River and Southern Coast Hydrologic Regions. As shown in Table 5-5, the conserved water will be delivered (volumes at Imperial Dam), as follows:

- 105,000 AFY to MWD, can be reduced by up to 3.5 KAFY subject to tailwater return systems performance and potable projects potentially funded by MWD
- 200,000 AFY to SDCWA
- 103,000 AFY to CVWD
- 11,500 AFY of Miscellaneous PPRs

These transfers are to be achieved within the 3.1 MAFY cap of Colorado River water and without reducing agricultural productivity; thus, increasing productive water use. Under the QSA/Transfer Agreements, IID delivered mitigation water to Salton Sea in calendar years 2003-2017. Mitigation is being implemented to address impacts throughout the region with particular focus on the Salton Sea.

Table 6-0D presents the amounts to be delivered and the recipients of the conserved water. Table 6-0E shows the conservation practice that is planned to be employed during the period of transition from fallowing to full conservation efficiency (2003 through 2017). The purpose of the fallowing is to provide mitigation water to the Salton Sea. From 2018 on, all of the transferred water can be from efficiency conservation, should IID and the customers it serves decide to follow that course.

Table 6-0 D: IID Conserved and Mitigation Water Delivery Schedule 2003-2077 (KAF, CRWDA Exhibit B)

Table 6-0 D: IID Conserved and Mitigation Water Delivery Schedule 2003-2077 (KAF, CRWDA Exhibit B)							
		Delivery to:					
QSA Year	Calendar Year	MWD	SDCWA	Salton Sea Mitigation (SDCWA)	CVWD[50]	MWD	Total Delivery
1	2003	110	10	5	0	0	120
2	2004	110	20	10	0	0	130
3	2005	110	30	15	0	0	140
4	2006	110	40	20	0	0	150
5	2007	105	50	25	0	0	155
6	2008	105	50	25	4	0	159
7	2009	105	60	30	8	0	173
8	2010	105	70	35	12	0	187
9	2011	105	80	40	16	0	201
10	2012	105	90	45	21	0	216
11	2013	105	100	70	26	0	231
12	2014	105	100	90	31	0	236
13	2015	105	100	110	36	0	241
14	2016	105	100	130	41	0	246
15	2017	105	100	150	45	0	250
16	2018	105	130		63	0	298
17	2019	105	160		68	0	333
18	2020	105	192.5		73	2.5	373
19	2021	105	205		78	5.0	393
20	2022	105	202.5		83	2.5	393
21	2023	105	200		88	0	393
22	2024	105	200		93	0	398
23	2025	105	200		98	0	403
24	2026	105	200		103	0	408
25	2027	105	200		103	0	408
26	2028	105	200		103	0	408
27-45	2029-2047[51]	105	200		103	0	408
46-75	2048-2077[52]	105	200		50	0	355

[50] Or MWD if CVWD declines to acquire
[51] Assumes SDCWA does not elect termination in year 35 when its wheeling agreement with MWD ends
[52] Assumes SDCWA and IID mutually consent to renewal term of 30 years - http://www.usbr.gov/lc/region/g4000/QSA/crwda.pdf

Table 6-0 E: Compromise IID QSA Delivery Schedule, 2003-2017 (KAF)

Table 6-0 E: Compromise IID QSA Delivery Schedule, 2003-2017 (KAF)[53]							
	Delivery for Transfer			Conservation Practice			
1	2	3	4	5	6	7	8
Year	to SDCWA	to CVWD	Total Transfer (Col 2+3) or (Col 5+6)	Efficiency for Delivery	Fallowing for Delivery	Fallowing for Mitigation	Total Fallowing (Col 6+7)
2003	10	0	10	0	10	5	15
2004	20	0	20	0	20	10	30
2005	30	0	30	0	30	15	45
2006	40	0	40	0	40	20	60
2007	50	0	50	0	50	25	75
2008	50	4	54	4	50	25	75
2009	60	8	68	8	60	30	90
2010	70	12	82	12	70	35	105
2011	80	16	96	16	80	40	120
2012	90	21	111	21	90	45	135
2013	100	26	126	46	80	70	150
2014	100	31	131	71	60	90	150
2015	100	36	136	96	40	110	150
2016	100	41	141	121	20	130	150
2017	100	45	145	145	0	150	150
Total	**1,000**	**240**	**1,240**	**540**	**700**	**800**	**1,500**

6.2.3 Other Colorado River Operating Policies and Agreements

A number of other federal operating policies could affect IID diversions, deliveries, and operations, and influence the reliability of the Imperial Valley's Colorado River supply under different hydrologic conditions as described in the following sections.

6.2.3.1 Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs

These Operating Criteria[54] control operation of the Colorado River reservoirs in compliance with requirements set forth in the Colorado River Compact of 1922, the United States-Mexico Water Treaty of 1944, the Colorado River Storage Project Act of 1956, the Boulder Canyon Projects Act (Lake Mead) and the Colorado River Basin Project Act (Upper Basin Reservoirs) of 1968, and other applicable federal laws.[55] Under these Operating Criteria, the Secretary of the Interior makes annual determinations published in the USBR Annual Operating Plan for Colorado River Reservoirs (discussed below) regarding the release of Colorado River water for deliveries to the Lower Basin States. A requirement to equalize active storage between Lake Powell and Lake Mead when there is sufficient storage in the Upper Basin is included in these operating criteria.

[53] Source: https://www.iid.com/home/showpublisheddocument?id=9571
[54] Criteria for Coordinated Long-Range Operation of Colorado River reservoirs Pursuant to the Colorado River Basin Project Act of September 30, 1967 (P.L. 90-537). June 8, 1970 – http://www.usbr.gov/lc/region/pao/pdfiles/opcriter.pdf
[55] Source: USBR website: The Law of the River, for Operating Criteria and other agreements; http://www.usbr.gov/lc/region/g1000/lawofrvr.html

6.2.3.2 Annual Operating Plan (AOP) for Colorado River Reservoirs

Annual operating plans are developed in accordance with Section 602 of the Colorado River Basin Project Act (Public Law 90-537); the Criteria for Coordinated Long-Range Operations of Colorado River Reservoirs Pursuant to the Colorado River Basin Project Act of 1968, as amended, promulgated by the Secretary of the Interior; and Section 1804(c)(3) of the Grand Canyon Protection Act (Public Law 102- 575). [56]As part of the AOP process, the Secretary makes determinations regarding the availability of Colorado River water for deliveries to the Lower Basin States, including when normal, surplus, and shortage conditions occur on the lower portion of the Colorado River.

6.2.3.3 Interim Guidelines for Lower Basin Shortages

Circumstances that triggered the need for the 2007 guidelines are described by the USBR, as follows. The Colorado River Upper Basin experienced a protracted multi-year drought which began in October 1999 and ended in 2010. In the summer of 1999, Lake Powell was essentially full, with reservoir storage at 97 percent of capacity. However, it became evident with precipitation totals at only 30 percent of average for October, November, and December that the stage was set for the low runoff that occurred in 2000.

In the late 1990s, inflow to Lake Powell was above average and the lake stayed full, from 1995 through 1999. As late as September 1999, Lake Powell was still 95 percent full. Inflow into Lake Powell from water years 2000 through 2004 was about half of what is considered average as shown in Table 6-0 F. The 2002 inflow was the lowest recorded (24%) since Lake Powell began filling in 1963. However, by 2005, unregulated inflow into Lake Powell was 118% of average, and then hovered between 78% and 81% for three of the next five years before peaking at 147% of average inflow in 2011, then dropping to 45% in 2012. Unregulated inflow to Lake Powell as a percent of average between 1981 and 2000 was 111.9%, but the average inflow dropped significantly between 2001 and 2020 to 80.4%.

Table 6-0 F: Unregulated Inflow to Lake Powell, 1981-2020 (Percent of Historic Average)

Table 6-0 F: Unregulated Inflow to Lake Powell, 1981-2020 (Percent of Historic Average)[57]									
1981	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
52%	118%	188%	192%	162%	171%	124%	74%	55%	49%
1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
81%	68%	133%	63%	147%	96%	157%	125%	118%	64%
2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
65%	24%	57%	55%	118%	80%	81%	112%	94%	78%
2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
147%	45%	47%	96%	94%	89%	110%	43%	120%	54%
Average 1981-1990		**Average 1991-2000**		**Average 2001-2010**		**Average 2011-2020**		**Average 1981-2020**	
118.5%		105.3%		76.3%		84.5%		96.1%	

[56] For the AOPs, visit http://www.usbr.gov/lc/region/g4000/aop/
[57] Source: Data provided in an email dated May 4, 2021 from Heather Patno (USBR Hydraulic Engineer/Hydrologist) to Harvey Gobas (Gobas Engineering Management Services, Inc., subconsultant to Psomas in the preparation of this UWMP)

Whether a drought exists is determined by comparison with normal hydrology for an area. Normal is defined as a long-term average of annual precipitation data, which may include droughts and extremely wet periods. No single year will ever be normal due to the complexity of weather patterns. Because the occurrence of a drought affects this average, the definition of normal for the American Southwest, will be altered for the next several decades.

In the midst of the drought period, USBR developed the 2007 Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead. By consensus, the seven Basin States selected the Preferred Alternative[58] as the new basis for USBR operation of the reservoirs, determining that it best meets all aspects of the purpose and need for the federal action.

The 2007 Interim Guidelines Preferred Alternative highlighted the following:

1. Need to remain in place for the extended period of the interim Guidelines
2. Desirability of the alternative based on facilitated consensus recommendation from Basin States
3. Likely durability of the mechanisms adopted in the Preferred Alternative in light of the extraordinary efforts that the Basin States and water users have undertaken to develop implementing agreements that will facilitate the water management tools (shortage sharing, forbearance, and conservation efforts) identified in the Preferred Alternative
4. Range of elements in the alternative that will enhance the Secretary's ability to manage the Colorado River reservoirs in a manner that recognizes the inherent tradeoffs between water delivery and water storage.

Importantly for the long-term stable management of the Colorado River, adoption of this decision activates a legal agreement among the Basin States that contains a critically important provision: The Basin States have agreed to mandatory consultation provisions to address future controversies on the Colorado River through consultation and negotiation, as a requirement, before resorting to litigation. With respect to the various interests, positions, and views of each of the seven Basin States, this provision adds an important new element to the modern evolution of the legal framework for the prudent management of the Colorado River.

In June 2007, the USBR announced that a preferred alternative for Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations of Lake Powell and Lake Mead (Preferred Alternative) had been determined.[59] The Preferred Alternative, based on the Basin States consensus alternative and an alternative submitted by the environmental interests called "Conservation Before Shortage," was comprised of four key operational elements. These four key elements of the Preferred Alternative which would guide operations of Lake Powell and Lake Mead through 2026 are:

1. Shortage strategy for Lake Mead and Lower Division states: The Preferred Alternative proposed discrete levels of shortage volumes associated with Lake Mead elevations to conserve reservoir storage and provide water users and managers in the Lower Basin with greater certainty to know when, and by how much, water deliveries will be reduced during low reservoir conditions.

[58] Source: https://www.usbr.gov/newsroom/newsroomold/newsrelease/detail.cfm?RecordID=17341
[59] Source: USBR website: http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=17341. Description of the preferred alternative is available on Reclamation's Lower Colorado Region web site: http://www.usbr.gov/lc/region/programs/strategies/documents.html

2. Coordinated operations of Lake Powell and Lake Mead: The Preferred Alternative proposed a fully coordinated operation of the reservoirs to minimize shortages in the Lower Basin and to avoid risk of curtailments of water use in the Upper Basin.
3. Mechanism for storage and delivery of conserved water in Lake Mead: The Preferred Alternative proposed the Intentionally Created Surplus (ICS) mechanism to provide for the creation, accounting, and delivery of conserved system and non-system water thereby promoting water conservation in the Lower Basin. Credits for Colorado River or non-Colorado River water that has been conserved by users in the Lower Basin creating an ICS would be made available for release from Lake Mead at a later time. The total amount of credits would be 2.1 MAF, but this amount could be increased up to 4.2 MAF in future years.
4. Modifying and extending elements of the Interim Surplus Guidelines, which determine conditions under which surplus water is made available for use within the Lower Division states. These modifications eliminate the most liberal surplus conditions thereby leaving more water in storage to reduce the severity of future shortages.

The time span to 2026 provides an opportunity to gain operating experience for the management of Lake Powell and Lake Mead and to improve the basis for making additional future operational decisions, whether during the interim period or thereafter.

Figure 6-2[60] shows how the coordinated operation element allows for the adjustment of Lake Powell releases to respond to low reservoir storage conditions in either Lake Powell or Lake Mead. The ICS water conservation mechanism encourages efficient use and management of Colorado River water and enhances conservation opportunities in the Lower Basin and the retention of water in Lake Mead.

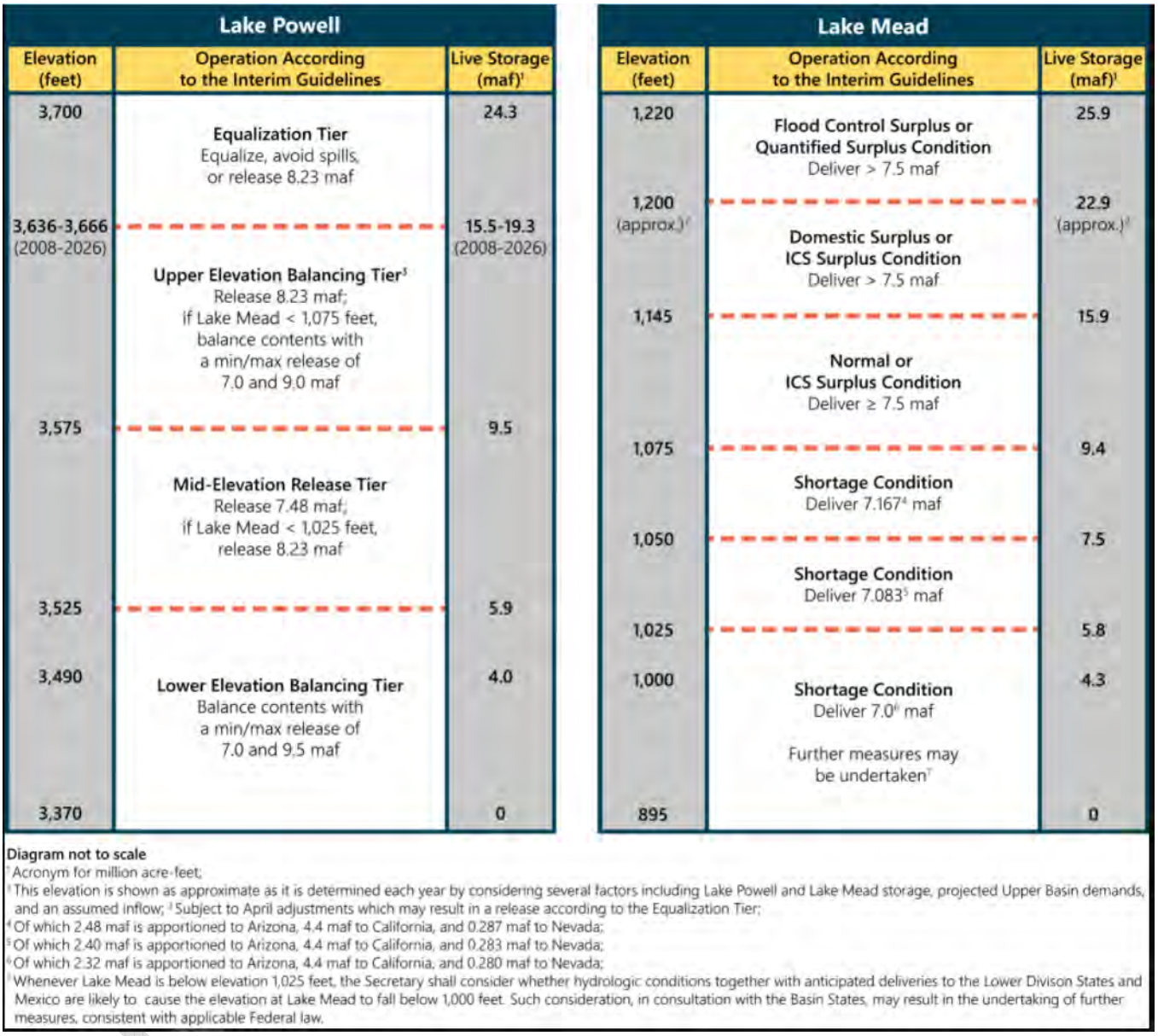
Importantly for long-term stable management of the Colorado River, adoption of the 2007 Interim Guidelines activates a critical provision in the legal agreement among the basin states: the basin states have agreed to mandatory provisions to address future controversies on the Colorado River through consultation and negotiation before resorting to litigation. With respect to the various interests, positions, and views of each of the seven basin states, this provision adds an important element to the evolution of the legal framework for the prudent management of the Colorado River.

Furthermore, the coordinated operation element allows for adjustment of Lake Powell releases to respond to low reservoir storage conditions in either Lake Powell or Lake Mead, while, keeping the 2007 Interim Guidelines in place through 2026 provides an opportunity to gain operating experience for the management of Lake Powell and Lake Mead and to improve the basis for making additional future operational decisions, whether during the interim period or thereafter.

The Intentionally Created Surplus (ICS) water conservation mechanism encourages efficient use and management of Colorado River water and enhances conservation opportunities in the Lower Basin and the retention of water in Lake Mead.

[60] Source: Colorado River Basin | Bureau of Reclamation (usbr.gov)

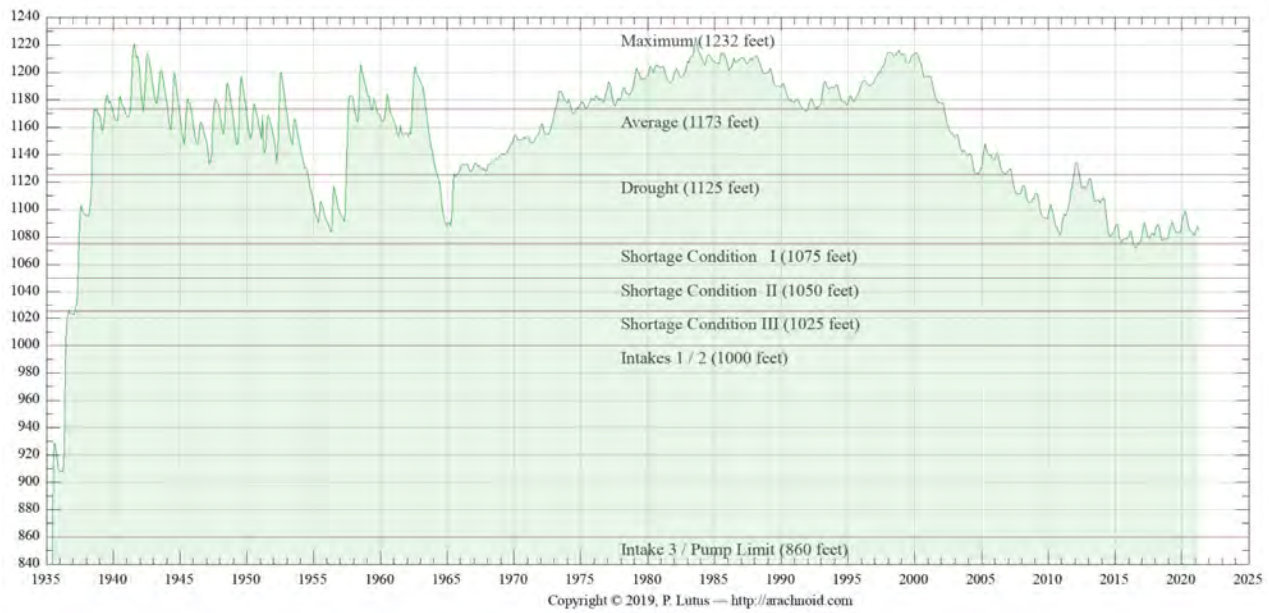
Figure 6-2: Prescribed Operations of Lake Powell and Lake Mead in the Interim Guidelines



In 2016, Lake Mead's water level fell just below 1075 feet, which is the level that signals a shortage necessitating rationing. For most of the past five years, Lake Mead has remained near 1075 feet, which is lower than at any time since 1937, two years after the lake began filling, and is 150 feet below the highest level of 1,225 feet reached in 1983. Historic Lake Mead elevation levels are shown in Figure 6-3.[61]

[61] Source: https://arachnoid.com/NaturalResources/

Figure 6-3: Historic Lake Mead Elevation Levels 1935 to 2021 in the Interim Guidelines



6.2.3.4 Annual 417 Process

Pursuant to the Code of Federal Regulations (CFR) Title 43 Part 417 (43 CFR part 417), prior to the beginning of each calendar year, USBR consults, as appropriate, with holders of Boulder Canyon Project Act Section 5 contracts (Contractors) for the delivery of water. IID is one such Contractor. Under these consultations, USBR makes recommendations related to water conservation measures and operating practices in the diversion, delivery, distribution, and use of Colorado River water as stated by USBR in the following the following excerpt:

> *"The Regional Director or his (sic) representative will, prior to the beginning of each calendar year, arrange for and conduct such consultations with each Contractor as the Regional Director may deem appropriate as to the making by the Regional Director of annual recommendations relating to water conservation measures and operating practices in the diversion, delivery, distribution and use of Colorado River water, and to the making by the Regional Director of annual determinations of each Contractor's estimated water requirements for the ensuing calendar year to the end that deliveries of Colorado River water to each Contractor will not exceed those reasonably required for beneficial use under the respective Boulder Canyon Project Act contract or other authorization for use of Colorado River water."*

6.3 Groundwater

Imperial Valley and Coachella Valley are located in the Colorado Desert geomorphic province. The Colorado Desert is a low-lying barren desert basin, with portions of the area below mean sea level and runoff flowing to the Salton Sea. The province is a depressed block between active branches of the alluvium-covered San Andreas Fault with the southern extension of the Mojave Desert to the east.

Characterized by the ancient beach lines and silt deposits of extinct Lake Cahuilla, the Region is bounded to the west by the Jacumba Mountains and on the east by the Chocolate Mountains. Beyond the westerly mountains lies San Diego County, and to the east is the Colorado River watershed and southwestern Arizona. Much of the central portion of the Region is below sea level, reaching nearly 230 feet below mean sea level (MSL) at the Salton Sea.

Imperial Region is situated on and near extensive fault systems, generally trending northwest to southeast. Large nearby faults include the San Andreas, Superstition Hills, and San Jacinto faults (Hart and Bryant 1999). The faulting influences groundwater movement.

Groundwater basins within the Imperial Region include portions of the Coyote Wells Valley Basin, Borrego Valley Basin, Ocotillo-Clark Valley Basin, West Salton Sea Basin, and Ogilby Valley Basin, and all of the Imperial Valley Basin, East Salton Basin, and East Amos Valley Basin, for a total of approximately 2,800 square miles (DWR 1975).[62] The major surface water body within the Region is the Salton Sea, and drainage is to the Salton Sea via the New River and Alamo River, a few direct-to-sea drains and various washes. Groundwater-bearing materials are generally younger than older alluvial sediments derived from the erosion of the surrounding mountain ranges.

6.3.1 East Mesa Groundwater Basin

Located in the southeastern portion of the Salton Basin, East Mesa is the area east of the East Highline Canal, and west of the Sand Hills Fault. The Algodones Fault, an easterly splay of the San Andreas Fault system, is mapped as bordering the eastside of the Sand Hills (Loeltz et. al. 1975). The East Mesa is also roughly bordered by the Coachella Canal on the east, and the All-American Canal (AAC) on the south. The East Mesa is an alluvial surface that slopes gently west-southwest, covered with thin veneers of wind-blown sand. The East Mesa aquifer is chiefly unconfined, homogenous, and composed of coarse-grained deposits of gravel, sand, silt, and silty clay deposited by the Colorado River.

Faults in the East Mesa act as partial barriers to the westward flow of groundwater from this area. The Calipatria Fault also crosses a small portion of the East Mesa along the southwest margin and impedes the flow of groundwater out of East Mesa (Crandall 1983).

6.3.2 Imperial Valley Groundwater Basin

Most studies of groundwater conditions in the Imperial Valley (central irrigated area) focus exclusively on the upper 1,000 feet of water-bearing strata. Groundwater data are limited for the Imperial Valley area because of the poor quality and poor yields in the upper 300 feet. Historically there has been little need to investigate and develop the groundwater in the Imperial Valley area due to the availability and low cost of imported surface water.

Studies indicate that groundwater in the Imperial Valley generally occurs in two water-bearing zones: (1) a shallow unconfined aquifer from 0 to 300 feet bounded at depth by a low-permeability clay; and (2) an intermediate semi-confined aquifer from 300 to 1,500 feet bounded above by the aquitard and at depth by the older marine and non-marine sediments (Tetra Tech 1999; Montgomery Watson 1995). A third, deeper

[62] Source: https://www.iid.com/home/showpublisheddocument?id=9546 (refer to page P-8)

aquifer has been identified by some authors that may be present at depths greater than 1,500 feet but is likely a poor water supply resource (Durbin and Imhoff 1993).

Hydraulic communication between the upper unconfined and lower semi-confined water-bearing zones is weak but varies depending on geographic location. Elevations of the base of the deeper aquifer vary from -800 feet MSL in the center of the Salton Trough to -200 feet MSL in the northeast. The upper aquifer averages 250 feet in thickness, and the deeper aquifer averages 550 feet in thickness. The aquitard separating the two water-bearing zones varies in thickness from 0 to 260 feet. This aquitard reportedly pinches out near East Mesa and toward the West Mesa, such that only one somewhat homogenous aquifer is present in the mesas adjoining the Imperial Valley area.

6.3.3 West Mesa Groundwater Basin

West Mesa is a loosely defined area of gently sloping desert land that lies to the south of the Salton Sea, west of the Westside Main Canal, and east of the Coyote and Jacumba Mountains. The area includes portions of several small groundwater subbasins for which little information is known.

The exception being the Ocotillo/Coyote Wells Subbasin, for which a study by USGS for IC/USGS and two groundwater studies by Bookman Edmonston for U.S. Gypsum (Bookman-Edmonston 1996; Bookman-Edmonston 2004) provide information on both the quality and quantity of available groundwater; the sub basin was designated a sole source aquifer by USEPA in 1996. Underlying geology is critical for both water levels and water quality in the Ocotillo-Coyote Wells basin, with some domestic wells having non-potable water. This part of West Mesa includes the area around the town of Plaster City where the U.S. Gypsum plant is situated.

The groundwater aquifer in the Ocotillo/Coyote Wells Subbasin is unconfined, with a saturated thickness of approximately 400 feet and an average depth-to-groundwater of approximately 100 feet. The aquifer is generally homogenous and more coarse-grained than the Imperial Valley. The data do not indicate separate water-bearing zones or intervening aquitards of any regional significance. Groundwater and surface water flows east toward discharge areas in the Imperial Valley and Salton Sea.

6.3.4 Watersheds

Imperial Region lies wholly within the Salton Sea Transboundary Watershed (USGS Hydrologic Unit 18100200), which is the Priority Watershed in the Colorado River Basin Region. It encompasses one-third of the region (about 8,360 square miles) and contains five (out of a total of six) of the Region's impaired surface waterbodies. Most of the watershed is in Imperial County. The watershed has been identified as a Category I (impaired) Watershed under the 1998 California Unified Watershed Assessment.

The watershed contains five main surface waterbodies: the Salton Sea, the New River, the Alamo River, the Imperial Valley Agricultural Drains, and the Coachella Valley Stormwater Channel.

The Salton Sea is California's largest lake and was famous for its sport fishery and recreational uses. It is about 35 miles long and 9-15 miles wide with approximately 360 square miles of water surface and 105 miles of shoreline. The surface of the sea lies approximately 232 feet below sea level. One of the major functions of the Salton Sea is to serve as a sump for agricultural wastewater for the Imperial and Coachella Valleys. Approximately 75% of the freshwater inflow to the Sea is agricultural drain water from Imperial Valley. As the Sea has no outlets, salts concentrate in it and nutrients enhance the formation of eutrophic

conditions. Currently, the Sea is 25% saltier than the ocean, with salinity increasing at approximately 1% per year.

The New River originates in Mexico. It flows approximately 20 miles through the City of Mexicali, Mexico, crosses the International Boundary, continues through the City of Calexico in the United States, and travels northward about 60 miles until it empties into the Salton Sea. Its flow at the International Boundary is about 108,400 to 145,000 acre-feet per year (AFY). The New River carries urban runoff, untreated and partially treated municipal wastes, untreated and partially treated industrial wastes, and agricultural runoff from the Mexicali Valley, Mexico across the International Boundary into the United States. In addition, the River carries urban runoff, agricultural runoff, treated industrial wastes, and treated, disinfected and non-disinfected domestic wastes from the Imperial Valley. It also carries approximately 4,350 to 7,970 AFY of treated wastewater from point sources in Imperial Valley. The New River flow at the Salton Sea is about 430,000 AFY.

The Alamo River channel originates approximately 2 miles south of the International Boundary with Mexico and runs northward. Across the border it flows for about 50 miles until it empties into the Salton Sea. The Alamo River is dominated by agricultural return flows from Imperial Valley. It also carries approximately 15 to 27 cubic feet per second (cfs) (10,867 to 19,200 AFY) of treated wastewater from point sources in Imperial Valley. Its flow at the International Boundary is 3 to 5 cfs (2,100 to 3,620 AFY), whereas at its delta with the Salton Sea is about 800 to 1,000 cfs (600,000 to 800,000 AFY).

The Ag Drain system comprises over 1,450 miles of surface drains, which discharge into the Alamo and New Rivers and the Salton Sea. The Ag Drains primarily carry agricultural runoff from the Imperial Valley. Agricultural discharges in the Imperial Valley average about 830,000 acre-feet/year. Of this amount, approximately 36 percent is tailwater, 33 percent is seepage, and 30 percent is tilewater. The resulting mix of tailwater, tilewater, and seepage contains pesticides, nutrients, selenium, and silt in amounts that violate water quality standards.

6.3.5 Groundwater Quality

Beneath East Mesa the water quality is moderate to poor and has been locally influenced by seepage from the major conveyance canals (All American and East Highline canals). Higher than recommended concentrations of nitrate and fluoride for drinking water are common and elevated concentrations of sulfate may also be present. Concentrations of boron are typically higher than those recommended for certain agricultural crops. Elevated levels of selenium present in IID drain water are thought to be an imported contaminant from the Colorado River supply.

Total dissolved solids (TDS) concentrations were summarized for three distinct water-bearing zones, shallow (80’ to 300’), intermediate (300’ to 1,500’) and deep (>1,500’) aquifers (Durbin and Imhoff 1993). The shallow aquifer contains highly variable water quality, ranging from 800 to over 10,000 milligrams per liter (mg/L) TDS. Relatively consistent water quality is present in the shallow aquifer beneath East Mesa ranging from 800 to 2,200 mg/L TDS. The intermediate aquifer contains water that is uniform averaging 2,200 mg/L, while the deep aquifer contains the poorest quality water.

The Imperial Valley contains a large area of poor quality groundwater that is generally unsuitable for domestic or irrigation use without treatment. The chemical quality of groundwater differs greatly from place

to place, and salinity is the primary water quality issue. TDS ranges from a few hundred to more than 10,000 mg/L.

West Mesa groundwater is derived from recent precipitation that has not yet reached the more saline deposits of the central part of the valley and may contain a TDS concentration which ranges from about a high quality of 300 ppm TDS to non-potable with over 2,000 ppm and even up to 6,000 ppm in some wells. This is particularly the case in the Nomirage area where wells have been drilled into old marine or brackish deposits along the northern side of the Jacumba Mountains.

As the City of El Centro did not pump groundwater in the past five years, DWR Table 6-1 was omitted.

6.4 Surface Water

The City does not use, or plan to use, self-supplied surface water as part of its water supply. The City purchases surface water from IID, which is not self-supplied.

6.5 Stormwater

The City captures runoff in retention/detention basins, which discharge to IID drains. The City is currently not using stormwater to meet local water supply demands. At this time, there are no plans to utilize stormwater, but that could change in the future.

6.6 Wastewater and Recycled Water

El Centro collects sanitary wastewater flows within the City's water service area and conveys the flows to the municipal wastewater treatment plant located on La Brucherie Road in the northwest part of the City. The City operates and maintains the wastewater collection system and the treatment plant. Metered wastewater flows averaged approximately 3.15 MGD (3,529 AFY) for 2020 as shown in Table 6-2. This represents an approximate reduction of seven percent compared with 2015 wastewater volumes.

Table 6-2: Wastewater Collected Within Service Area in 2020

Table 6-2 Retail: Wastewater Collected Within Service Area in 2020					
Wastewater Collection			Recipient of Collected Wastewater		
Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015 (AFY)	Wastewater Treatment Agency	Treatment Plant Name	Is WWTP Located Within UWMP Area?
City of El Centro	Metered	3,529	City of El Centro	El Centro	Yes
	Total	3,529			

The wastewater treatment plant, which has a plant capacity of 8.0 MGD (8,960 AFY), provides primary and secondary treatment with ultraviolet (UV) disinfection. The plant does not have tertiary treatment facilities and does not produce recycled water. All treated effluent is discharged to the Central Main Drain. Due to the poor percolation of local soils, high water table, old infrastructure, and depth of infrastructure,

groundwater infiltration has become a problem. A Capital Improvement Plan has been completed but has not been adopted. The upgrades would be dependent upon development impact fees and reimbursement agreements.

Photo 6-1: El Centro Wastewater Treatment Plant

No community in the Imperial Region produces recycled water as studies have found the capital costs to construct recycled water facilities to be cost-prohibitive relative to the purchase of IID imported water. Also, there has been a lack of political acceptance for rate increases as rate-payers have a limited ability or willingness to pay. Most communities identified the need for State, federal, or private sector funding to upgrade wastewater treatment plants. Wastewater facilities within the Imperial Region ultimately discharge to the Salton Sea (via drains and/or the Alamo River or New River). The flows help sustain habitat along IID drains and the New and Alamo rivers. The Salton Sea depends on agricultural and IID system discharges, direct rainfall, and municipal wastewater inflows to offset the effect of evaporation on salinity levels.

Regional recycled water opportunities were evaluated in the 2012 Imperial Integrated Regional Water Management Plan. Recycled water could be used to supplement or replace Colorado River water used to irrigate local golf courses, recreational areas, green spaces, or nearby agricultural land. Recycled water could be used to create or maintain habit features or for algae production. This would help to free Colorado River water for future industrial growth or other beneficial uses.

Imperial Region has 14 wastewater treatment plants and discharge locations. Wastewater effluent volume is approximately 16,000 acre-feet per year and future volume is projected to exceed 36,000 acre-feet per year. If all the wastewater available were reclaimed, it would only provide a fraction of the Region's

forecasted future demand for renewable energy, which is between 146,000 and 180,000 acre-feet per year, with and without conservation, respectively.

Wastewater treatment plants upgrades have been constructed in the communities of Imperial and Niland within the past two years and other upgrade projects are in the planning phases in Brawley and Seeley. While recycled water may not be cost-effective for individual communities since they can obtain less expensive water from IID, it may be a viable method to increase regional water supplies or may become more cost-effective as the cost of water for new users is factored into the planning process.

Successful water recycling projects require water user acceptance and commitment, public support and acceptance, evaluation of environmental impacts and benefits, and analysis of economic feasibility. Growers have expressed concern with proposals to blend tertiary treated Title 22 compliant water in IID irrigation canals. Public acceptance of recycled water remains a major obstacle to implementation of water recycling projects. The following four water quality characteristics and our sources of potential contaminants have been identified as being of particular concern regarding confidence in the safety of the water: (1) microbiological quality, (2) salinity, (3) heavy metals, and (4) organic and inorganic substances such as pharmaceuticals and personal care products, household chemicals and detergents, fertilizers, pesticides, fungicides, and animal growth hormones.

Salinity is a particular concern in the Imperial Region. Municipal water supplies of raw Colorado River water typically have salinity levels above 760 ppm, and municipal use typically adds 300 ppm. TDS levels of 1,000 ppm adversely affect most crops or require changes in irrigation practices (e.g., increased leaching). Thus, recycling for irrigation may require desalting, blending with other supplies, or changes in agricultural practices.

The Imperial County General Plan Water Element identifies the following major environmental issues expected to be of concern with local tertiary treatment systems:

- Reduction of flows in IID drains
- Reduction of flows to Salton Sea
- Increase in drain water salinity
- Impact on fish and wildlife, recreation, and aesthetic values

Any diversion of flows may have environmental impacts on the drains, rivers and/or the Salton Sea, and related mitigation costs must be factored into reuse strategies. Directing treated discharges away from the Salton Sea may not be feasible until the Salton Sea salinity level impedes fish production or has been restored and is not dependent on the inflows (Salton Sea Authority, 2006). Also, additional treatment to facilitate recycling could result in the concentration of contaminants in the remaining flows discharged to the drains or rivers.

Imperial County and IID will work to advance recycled water use in the region by:

- Integrating the recycling municipal wastewater with a regional mitigation banking strategy.
- Supporting wastewater facility plant upgrades that propose reclaiming municipal water for use in renewable energy projects planned or recently constructed in the communities of Seeley, Brawley, and Imperial and include as part of the near-term strategy.

- Requiring mitigation to meet state and federal environmental requirements related to reduction in flows to IID drains and to the New and Alamo rivers and other waterways through development of a regional mitigation bank; seek to provide regional benefits, create partnerships, and meet multiple Imperial IRWMP goals by using reclaimed wastewater for this purpose where cost-effective and timely.
- Considering regional municipal water reclamation projects to increase cost-effectiveness of project development and operation, provide benefits to multiple parties, and improve opportunities to reuse the water.
- Providing policy and financial incentives for public/private partnerships to construct municipal recycling facilities and for crediting the produced water to sponsoring entities to allow for exchange of produced water for delivery of Colorado River water.
- Continuing to evaluate the cost-effectiveness and political viability of regional municipal wastewater treatment facilities that include reclaiming wastewater as part of the mid- and long-term water management strategy.
- Coordinating and adopting appropriate policies to encourage use of recycled municipal water in-lieu of Colorado River water to mirror California Energy Commission (CEC) and SWRCB policy.

Wastewater treatment and discharge characteristics associated with the City are shown in Table 6-3.

Note that DWR Tables 6-4, 6-5, and 6-6 show historical, existing, and projected recycled water use. As the City has not used recycled water in the past and does not project any such future use, these tables were not used in this report.

Table 6-3: Wastewater Treatment and Discharge Within Service Area in 2020

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020

WW Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2020 Volumes				
						WW Treated	Discharged Treated WW	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
El Centro	Central Main Drain	Drain Flows 8 Miles to Alamo River and then 39 Miles to Salton Sea	River or Creek Outfall	No	Secondary, Disinfected, Title 22	3,529	3,529	0	0	No
					Total	**3,529**	**3,529**	**0**	**0**	

6.7 Summary of Existing and Planned Sources of Water

The City's actual sources and volume of water for the year 2020 is shown in Table 6-8.

Table 6-8: Water Supplies – Actual (AF)

Table 6-8 Retail: Water Supplies — Actual			
Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Groundwater	NA	0	NA
Purchased or Imported Water	Imperial Irrigation District – Raw Colorado River Water	7,580	Other Non-Potable Water
Recycled Water	NA	0	NA
Total		7,580	

A summary of the projected sources of water for the City for the years 2025-2045 is shown in Table 6-9.

Table 6-9: Water Supplies, Projected (AF)

Table 6-9: Water Supplies — Projected						
Water Supply	Additional Detail on Water Supply	**Projected Water Supply** *Report to the Extent Practicable*				
		2025	**2030**	**2035**	**2040**	**2045**
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater	NA	0	0	0	0	0
Purchased or Imported Water	Imperial Irrigation District	7,905	8,143	8,334	8,755	9,176
Recycled Water	NA	0	0	0	0	0
Total		7,905	8,143	8,334	8,755	9,176

6.8 Desalinated Water Opportunities

The Imperial Region has very few desalination facilities. Some of the geothermal plants are using very high temperature fluids that flash to steam under the reduced pressures at the land surface. The resultant steam, once condensed, results in fresh water. The highly concentrated fluids and solids that remain are then re-

injected into the underground formations. One of the possibilities is to desalinate IID drain water to create additional fresh water supplies and support transfer of water via exchange.

Outside of the Region, CVWD using federal grant funding completed a pilot project to demonstrate desalination of brackish groundwater and agricultural drainage water to produce potable water (Malcom-Pirnie, 2008). This study concluded that brackish groundwater and agricultural drainage water can be effectively treated for reuse as non-potable water and potentially as new potable water. In this report, the estimated cost of drain water desalination, including brine disposal to managed wetlands, ranged from $480 to $740 per acre-foot depending on facility capacity and source configuration. Brine disposal using zero liquid discharge approaches could increase the cost of drain water desalination to as much as $1,200 per acre-foot. Metropolitan Water District of Southern California also initiated a study with CVWD (Whitewater Demonstration Project) to examine the feasibility of desalting agricultural return flows within the Coachella Valley (MWD/CVWD, 1999).

6.9 Exchanges or Transfers

The City currently does not participate with other water agencies on water exchanges or transfers into or out of the City's water service area and none are planned for the future at this time.

6.10 Future Water Projects

6.10.1 Groundwater Storage and/or Banking of Colorado River Water

As reported in the 2012 Imperial Integrated Regional Water Management Plan, groundwater storage and/or banking of Colorado River underruns was determined to be a high priority program for diversifying the regional water supply portfolio to help ensure a long-term, verifiable, reliable, and sustainable supply to meet current and future agricultural, municipal, commercial, industrial, and environmental demands.

Groundwater banking and storage would allow the Imperial Region to make maximum use of the available Colorado River supply and improve the ability for the Imperial Region to respond to variable climate conditions. Regardless of the long-term effects of climate change to Colorado River flows, whether it increases or decreases flows, groundwater banking would help the Imperial Region respond to supply vulnerabilities, make maximum beneficial use of the current entitlements, and help meet Imperial IRWMP objectives.

Development of groundwater storage and banking facilities requires a source of good quality water; conveyance facilities to put water into groundwater storage (canals, pipelines, recharge ponds); facilities to extract water from storage and deliver the water to the point of use (wells, canals, or pipelines); and recharge areas with appropriate groundwater conditions.

Conveyance includes using the existing regional Colorado River delivery canals when there is available capacity and developing smaller conveyances to move water into and out of the recharge area or wellfields used to recover recharged water. Developing recharge ponds requires access to relatively large tracts of land. In areas like East Mesa where the groundwater levels are relatively high, groundwater can be pumped to make storage space available. The groundwater conditions that influence site selection and design of recharge ponds and wells include permeability of the surface soils and underlying aquifers, the extent of clay layers, location of faults, groundwater quality, and current levels of groundwater use.

Alternative supplies available for groundwater storage or banking in the Imperial Region include Colorado River water, local runoff and floodwaters, and imported water from other regions. Of these alternative supplies, Colorado River entitlements were determined to be the best and most feasible source for groundwater storage. Groundwater storage is a beneficial use consistent with IID Colorado River water rights and California state law. The IID entitlement is fixed, but the agricultural demands vary year to year, resulting in underruns and overruns. IID could divert water in underrun years to store in a groundwater basin for future use.

Given the groundwater banking and storage options available to the Region, not all underruns could be captured for groundwater recharge. Conservatively estimated, the yield could be between 19,000 and 55,000 acre-feet per year depending on assumptions related to capping overruns, depleting groundwater storage, and how the water would be distributed. Higher yields are related to managing overruns through demand management and the IID Equitable Distribution Plan, because limiting overruns decreases IID's payback requirement, thus increasing the amount of water available for use or retained in storage in future years.

The stored water could be pumped and used by agricultural and other current users, and/or be provided to meet future water demands to avoid potential impacts to current water users. When IID is not able to divert underrun water in any given year to store the water in the groundwater basin, those with junior rights to the Colorado River are able to divert the water.

Imperial Region already has facilities in place to convey Colorado River water to candidate groundwater recharge locations. Colorado River water is conveyed through the 80-mile-long All-American Canal and diverted to CVWD's Coachella Canal and to IID's East Highline, Central Main, and Westside canals. Operational capacity in the All-American Canal and other canals would be needed when Colorado River water is available for delivery to recharge sites. No capacity limitations were identified in existing conveyance facilities based on the water availability and operational scenarios that were considered. For the reconnaissance study, smaller conveyance canals were configured to move water from the main canals to proposed recharge areas and from wellfields to the point of delivery.

In selecting Imperial Region Groundwater Recharge Areas, conducting additional feasibility studies and/or pilot projects is recommended to fill data gaps and resolve uncertainties regarding selection of a preferred area and location. Under California law, water recharged into an aquifer is recoverable by the party that conducted the recharge operation and put the water into storage, so any water intentionally recharged should be recoverable.

For the Imperial IRWMP, the feasibility of wellfields and recharge facilities in East Mesa, Sand Hills, and the Pilot Knob Mesa areas were reviewed using existing data and reports. The general concept of a groundwater recharge program in the East Mesa was investigated by the Colorado River Board of California and the USBR (USBR, 1992; USBR, 1979). West Mesa groundwater storage and in-lieu storage were also explored.

East Mesa provides the best opportunity for development of recharge and storage projects. IID entitlements to Colorado River water could be conveyed through the All-American and Coachella canals, and smaller project-specific conveyance could be developed to move water to proposed recharge ponds or the unlined portions of the old and unused Coachella Canal.

A 15-mile section of the unlined Coachella Canal west of the San Andreas Fault was abandoned when the lined canal was constructed. The unlined Coachella Canal has the ability to recharge about 10,000 acre-feet per year per mile (USBR, 1992). If all of the unlined section were used, up to 150,000 acre-feet per year could be recharged. Clay was used to reduce seepage from the unlined canal and removal of the clay layer might increase the percolation rate. To keep the recharge near the wellfields, modifying a two-mile long section of the unlined Coachella Canal could provide capacity to percolate 20,000 to 40,000 acre-feet per year. Wellfields would be located to extract water from storage and to recapture the recharged water.

Groundwater levels are relatively shallow in this area. This means available groundwater storage space is relatively full and could be pumped to create storage for Colorado River water. Pumped water quality may be ready for direct delivery or for blending. In areas of saline water, water pumped to evacuate groundwater storage for recharging Colorado River waters would either need to be treated (desalination) before use or the brackish groundwater be matched to an appropriate beneficial use. Put and take operations could be configured and tested to time recharge and pumping cycles to create and maintain a pocket of Colorado River water in the East Mesa.

Groundwater storage and banking projects are mid- to long-term opportunities. Specific groundwater storage and banking projects require further feasibility study and site investigations to better define water quality, hydrogeology, and design parameters; to optimize the recharge/extraction operations; and to compare local and interregional opportunities. The short-term focus will be on conducting needed feasibility studies and/or pilot and demonstration projects to obtain needed data; selecting a preferred groundwater banking alternative; developing final project designs and funding requirements; and seeking State and federal grant funding to conduct the needed evaluations and pilot projects.

DWR Table 6-7 is intended to show future water supply projects or programs that provide a quantifiable increase to an agency's water supply. As there are no future IID water supply projects or programs that provide a quantifiable increase to IID's water supply at this time, this table was omitted.

6.10.2 Future City Water Projects

The City maintains a proactive water infrastructure Capital Improvement Program focused on enhancing the efficiency of water operations as well as replacing aging water facilities on an as-needed basis. Current and future projects now underway or scheduled for implementation over the next few years include:

- AMR/AMI System – Installation of an AMR/AMI (Automatic Meter Reading/Advanced Metering Infrastructure) system. This replacement program, which is currently about 95 percent complete, will improve the City's operational efficiency through improved customer service and will allow for the early identification of water leaks thus resulting in a more reliable supply. This project is currently about 95 percent complete with completion anticipated within the next year. Additional information on the benefits of this system can be found in Chapter 9 of this UWMP.
- New Storage Reservoir – The City is planning to construct a new steel tank reservoir at the La Brucherie Pump Station site. The project is still in the planning stage, so the capacity of the reservoir has not yet been determined but it is likely to be 5 MG. Assuming the design capacity is finalized at 5 MG, that will increase the City's overall existing potable water storage by almost 36 percent (from 14 MG to 19 MG). This additional storage will enhance the City's overall system reliability by providing a greater cushion of potable water reserves during peak usage periods as well as

emergency system disruptions. Additionally, because the reservoir will be designed to meet the latest seismic codes, it will be less likely to fail during an earthquake. which is particularly important in a seismically active region like Imperial County.

- Imperial Avenue Overpass Transmission Main Replacement – Caltrans recently secured funding to allow reconstructing the Interstate 8 Imperial Avenue interchange in the City of El Centro. This $44 Million project will include construction of two new freeway ramps serving the southern side of Imperial Avenue, which will provide improved connectivity to the southern portion of the City. The improvements will complement city plans for future commercial and residential development as well as allowing for upgrading the water infrastructure in this area. Project construction of the Caltrans improvements began last year with completion scheduled by 2023.

  The City has been closely coordinating with Caltrans and will be replacing an aging 18-inch diameter steel transmission main which previously served this area of El Centro. The new 1,810 foot long 18-inch diameter PVC transmission main will be placed into operation when the new Caltrans bridge is opened in 2023.

6.11 Summary of Existing and Planned Sources of Water

Surface water imported from the Colorado River by IID is the primary water supply for the Imperial Region and the sole water supply for the City of El Centro. Colorado River water is used to meet all current agricultural and non-agricultural water demands in the IID water service area.

Rainfall is less than three inches per year and does not contribute to IID water delivery, although at times it does increase or reduce agricultural water demand. Groundwater in the Imperial Valley is of poor quality and is generally unsuitable for domestic or irrigation purposes, though some is pumped for industrial (geothermal) use.

As reported in the 2012 Imperial Integrated Regional Water Management Plan, groundwater storage and/or banking of Colorado River underruns was determined to be a high priority program for diversifying the regional water supply portfolio to help ensure a long-term, verifiable, reliable, and sustainable supply to meet current and future agricultural, municipal, commercial, industrial, and environmental demands.

Groundwater storage and banking projects are mid- to long-term opportunities. Specific groundwater storage and banking projects require further feasibility study and site investigations to better define water quality, hydrogeology, and design parameters; to optimize the recharge/extraction operations; and to compare local and interregional opportunities.

The City collects municipal wastewater and delivers it to their wastewater treatment plant via a network of 125 miles of sewer pipelines. The City's wastewater treatment plant has a capacity of 8.0 MGD (8,960 AFY) and provides primary and secondary treatment with ultraviolet (UV) disinfection. The plant does not have tertiary treatment facilities and does not produce recycled water. All treated effluent is discharged to the Central Main Drain. At this time, no community in the Imperial Region produces recycled water as studies have found the capital costs to construct recycled water facilities to be cost-prohibitive relative to the purchase of IID imported water.

Although the City of El Centro has been in talks with a geothermal energy company regarding upgrading the wastewater treatment plant to tertiary treatment in exchange for access to tertiary treated effluent, and

Imperial County and IID are working to advance recycled water use in the region, nothing is definitive at this time, and future recycled water use by the City cannot be projected in this UWMP.

The City's actual water supplies for 2020 and projected supplies for 2025 through 2045 are shown in Table 6-8 and Table 6-9, respectively.

6.12 Energy Intensity

CWC Section 10631.2[63] now requires water suppliers to provide information that can be used to calculate the energy intensity of their water service. Energy intensity is a ratio of energy consumed per unit (by volume) of water supplied. Required information is limited to that which is readily obtainable by the supplier for their operations, which includes acquiring, treating, and distributing water supplies.

The City of El Centro purchases all of its water supply from IID, which delivers raw Colorado River water to the City's Water Treatment Plant at 1101 Danenberg Drive in El Centro via IID's All-American Canal and Central Main Canal. Following treatment and storage in one of three potable water reservoirs at the plant site, the treated water is pumped directly into the City's water distribution system via four 200 hp pumps. The City also has a two 200 hp pumps located at the La Brucherie Reservoir site approximately two miles northwest of the WTP. The La Brucherie facility also pumps water directly into the City's distribution system from a 5.0 MG steel tank located at that site.

Energy usage information for IID's conveyance of raw Colorado River water to the City's WTP is not readily available. Therefore, the energy usage intensity reported in Table 6-10 A was calculated using the total utility approach as described in Appendix O of the UWMP Guidebook[64]. The "Volume of Water Entering Process" is equal to the total volume of water entering the City's distribution system from the WTP. The "Energy Consumed" is the total amount of kWh used at the City's two previously referenced pumping stations at the WTP and the La Brucherie Reservoir site, as well as some additional process pumping at the WTP. The "Energy Intensity" is equal to the "Energy Consumed" in kWh divided by the "Water Entering the Process" with the result shown in kWh/AF.

[63] Source: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=WAT&division=6.&title=&part=2.6.&chapter=3.&article=2.
[64] Source: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans/Final-2020-UWMP-Guidebook/Appendix-O---UWMP-2020.pdf

Table 6-10 A: Energy Intensity – Total Utility Approach (for 2020)

Table 6-10 A: Energy Intensity - Total Utility Approach (for 2020)	
Water Management Process	**Total Utility**
Volume of Water Entering Process (AF and MG)	7,580 AF / 2,470 MG
Energy Consumed	
• 1101 Danenberg WTP Process Pumping (kWh)	828,800
• 8th Street TP Pump Station (kWh)	2,022,400
• La Brucherie Reservoir Pump Station (kWh)	171,800
Total Energy Consumed (kWh)	3,023,000
Energy Intensity (kWh/AF)	**398.8**
Energy Intensity (kWh/MG)	**1,223.9**

6.13 Climate Change Impacts to Supply

As discussed in Section 4.6, Climate change predictions for the Imperial Region were derived by analyzing global climate model (GCM) simulations of past and future climate as presented in the 2012 Imperial Integrated Regional Water Management Plan.

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7 WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT

7.1 Overview

Every urban water supplier is required to assess the reliability of its water service under normal, dry, and multiple dry water years. As noted in Chapter 6 of this 2020 UWMP, IID, the wholesaler from which the City purchases 100 percent of its water supply, has significant historical legal protections in place to maintain its Priority 3(a) water right to consumptive use of 3.1 MAF of Colorado River water per year under the QSA/Transfer Agreements and its Priority 6(a) to 300 KAF per year. IID's present perfected right of 2.6 MAF per year makes its supply very reliable in terms of the District's ability to provide water to its service area even in dry years (as defined by elevations in Lake Mead under the 2007 Interim Guidelines for Lower Basin Shortages) as present perfected rights are the last to be reduced in time of drought.

7.2 Reliability of Colorado River Surface Water Supplies

The reliability and certainty of IID's ability to deliver Colorado River water to meet its customers' demands are governed by a number of factors as briefly summarized below:

1. In years with normal or average Colorado River flows and adequate reservoir storage in Lakes Powell and Mead, IID's allocation will remain capped at 3.1 MAF.
2. In years with surplus flows of more than 7.5 MAF in the Lower Basin (triggered by elevation of Lake Mead), the Seven-Party Agreement and the QSA/Transfer Agreements provide for diversions above 4.4 MAF for use in California. The likelihood of surplus flows in the Colorado River has been diminished by increased Colorado River water use by Nevada and Arizona and by continuing drought conditions in the Colorado River watershed over most of the past two decades. These conditions have resulted in historically low levels in Lake Mead as noted in Figure 6-3.
3. Even in drought years, with Lower Colorado River flows less than 7.5 MAF at Lees Ferry, existing laws and agreements provide security that IID will receive its annual present perfected right of 2.6 MAF and its overall annual water allocation of 3.1 MAF. However, should levels in Lake Mead fall below 1075 feet (critical shortage), other agreements take effect (as noted in Figure 6-3, Lake Mead levels have hovered just above 1075 feet for most of the past five years).

IID's protections are based on the following:

1. The 1885 California water right, based on reasonable and beneficial annual use of approximately 7 MAF conveyed to IID on June 22, 1916.
2. The 1922 Colorado River Compact requires the Upper Basin states to ensure the annual 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.

3. The 1931 Seven-Party Agreement provides a schedule of apportionments and priorities. In 1931, as a result of the Seven-Party Agreement, IID agreed to limit its California pre-1914 appropriative water rights in quantity and priority to the apportionments and priorities contained in the Agreement.
4. The 1964 Supreme Court decree in California v. Arizona defined the present perfected rights on the Colorado River and set IID's at 2.6 MAF annually because that was the annual quantity historically diverted by IID and used to irrigate 424,145 acres.
5. The 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.
6. The 1979 Supplemental Decree in Arizona v. California retains IID's present perfected rights to use of 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 non-perfected rights, regardless of state lines and federal agreements.
7. The 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead provide that shortages in Lake Mead storage (decreasing water levels in the reservoir) will prompt reductions in the annual deliveries to Arizona and Nevada, but that California will remain at 4.4 MAF per year.

If California's annual consumptive use remains at 4.4 MAF, then IID deliveries should likewise remain at the levels described in CRWDA Exhibit B (Table 6-0 C), decreasing from over 2.97 MAF in 2003 to almost 2.55 in 2017 (due to required Salton Sea mitigation flow), then increasing in 2018 to just over 2.7 MAF; and declining again until the reduction is stabilized in 2026 at just over 2.6 MAF per year. This reduction in net consumptive use is to be achieved through conservation efficiency practices; thereby, retaining the productivity of the agricultural system and meeting the demand of the existing M&I users, allowing for 3.1 MAF in net annual consumptive use.

As is evident, IID has significant historical legal protections in place to maintain its annual Priority 3(a) right to 3.1 MAF of Colorado River water even during periods of lower flow in the Colorado River.

7.2.1 Equitable Distribution Plan Water Apportionment

In some years IID's total annual consumptive use may exceed its Colorado River entitlement, resulting in inadvertent overruns (annual use that exceeds the capped amount of supply), which IID must pay back in subsequent years from extraordinary conservation practices.[65] Forecasted increases in M&I demand are expected to exacerbate this condition.

Any time annual consumptive use exceeds the threshold, an inadvertent overrun is charged to IID. In the case of underruns (annual consumptive use is less than capped amount), IID could have taken the underrun had storage been available to the District. Beyond 2011, the underrun potential decreases and overrun potential increases each year that water demand for renewable energy rises and M&I growth occurs on non-irrigated agriculture lands.

[65] Per terms of the USBR Inadvertent Overrun and Payback Policy - https://www.usbr.gov/lc/region/g4000/4200Rpts/DecreeRpt/2019/32.pdf

To reduce the likelihood of an overrun in any given year, the IID Board approved the 2009 Regulations for Equitable Distribution Plan (EDP) that define how the District will apportion water to its customers should demand be anticipated to exceed available supply.[66] When this is projected to occur, the IID Board may declare a supply/demand imbalance.

The IID Board of Directors adopted revised regulations for the EDP on October 28, 2013 (Resolution No. 26-2013).[67] Under the terms of the 2013 EDP, apportionment of supply among IID water users is to be based on the following criteria (PER Section 3.1 of the 2013 EDP):

a. Municipal Users – Base amount of 2006 usage plus current IID-wide average use per capita multiplied by the increase in population since 2006;

b. Industrial Users – For existing contracts, estimated based on the 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 Integrated Water Resources Management Plan;

c. Feed Lots, Dairies and Fish Farms – 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 used. 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 pursuant to Subsections 2.15 (a) through (c) to determine the apportionment per Eligible Agricultural Acre. The amount apportioned to acreage that has either suspended farming activities or is no longer receiving agricultural water service (such as renewable energy generation projects) and has been designated as suitable for the Temporary Land Conversion Fallowing Policy, is subject to a District Conservation Assignment (IID, 2013).

The baseline District-wide average is taken to be the year 2006 calculated average of approximately 0.26 AFY per capita (232 GPCD). A calculation for the EDP apportionment is to be done by IID at the end of each year using the District-wide average from the preceding year.

The District will notify non-agricultural users of their apportionment no later than December 1, prior to the beginning of the water year. Non-agricultural water users will be allowed to use that amount of water needed for reasonable and beneficial use. If a non-agricultural water user's usage exceeds the amount of apportionment quantified for its usage, the fee for the excess amount of water shall be the water user's standard water rate plus the conserved water rate (rate specified in the District's Rate Schedule 13).

For agricultural water users, implementation of the EDP will cap their annual water apportionments and call into effect measures that require additional planning and water management actions, with resulting higher costs.

[66] EDP, IID, Adopted 2007, Revised 2008, 2009, and 2013 – https://www.iid.com/home/showpublisheddocument?id=7749
[67] IID 2013 Regulations for EDP – https://www.iid.com/Home/ShowDocument?id=8322

Urban (domestic, commercial, and urban industrial) and environmental uses are not required to cut back as much as agriculture (if at all) during a year that EDP is in effect. The higher degree of reliability and change in timing of deliveries granted to non-agricultural users by IID can reduce the supply available to agricultural water users in any year the EDP is in effect – especially if new developments, with their associated water supply requirements, are approved.

It should also be noted that implementation of the EDP apportionment was legally challenged in 2013, and on February 6, 2018, the IID board approved a resolution repealing the EDP until the issue is resolved. As of April 2021, a resolution to the legal challenge has been reached based on lower and appellate court rulings, but a modified EDP has not yet been issued. However, IID staff anticipates issuance of that modified EDP later this year. IID staff also noted they expect the revised EDP will be similar in nature to the 2013 EDP and will probably incorporate about 80 percent of the prior provisions. In the Meantime, in the absence of an EDP, all IID water users continue to be subject to the requirement of reasonable and beneficial use of water under the California Constitution, Article X, section 2. IID continues to be subject to the 3.1 million acre-foot annual consumptive use cap under the Quantification Settlement Agreement and the rules of the federal Inadvertent Overrun and Payback Policy, which set forth the limitations under which IID may exceed its annual consumptive use cap, including payback requirements, and the circumstances under which IID cannot exceed its annual consumptive use cap.[68]

7.2.2 Legal

As presented in Chapter 6 and summarized above in Chapter 7 of this UWMP, there are numerous legal Agreements in place dating back to 1885, which define Colorado River water rights and specifically the rights of IID. As previously noted, IID, the City's wholesaler, has significant historical legal protections in place to maintain its Priority 3(a) water right to consumptive use of 3.1 MAF per year under the QSA/Transfer Agreements and its Priority 6(a) right to 300 KAF per year. IID's present perfected right of 2.6 MAF per year makes its supply very reliable in terms of the District's ability to provide water to its service area, including the City of El Centro, even in dry years.

7.2.3 Environmental

Construction of most of the Colorado River's water supply infrastructure predated major federal environmental protection statutes, such as the National Environmental Policy Act (NEPA; 42 U.S.C. §§4321 et seq.) and the Endangered Species Act (ESA; 87 Stat. 884, 16 U.S.C. §§1531-1544). Thus, many of the environmental impacts associated with the development of basin resources were not originally taken into account. Over time, multiple efforts have been initiated to mitigate these effects. Some of the highest-profile efforts have been associated with water quality (in particular, salinity control) and the effects of facility operations on endangered species.[69]

As basin species became listed in accordance with the ESA, which was enacted in 1973, 50 federal agencies and nonfederal stakeholders consulted with the U.S. Fish and Wildlife Service (FWS) to address the conservation of the listed species. As a result of these consultations, several major programs have been

[68] Source: Equitable Distribution Plan Litigation | Imperial Irrigation District (iid.com)
[69] Source: Information on Endangered species was extracted from a U.S. Congressional Research Service Report entitled "Management of the Colorado River: Allocations, Drought and the Federal Role, Updated December 15, 2020 – https://crsreports.congress.gov/product/pdf/R/R45546

developed to protect and restore endangered fish species in the Colorado River and its tributaries. Summaries of these key programs are presented below.

7.2.3.1 Upper Colorado Endangered Fish Recovery Program

The Upper Colorado Endangered Fish Recovery Program was established in 1988 to assist in the recovery of four species of endangered fish in the Upper Colorado River Basin. Congress authorized this program in P.L. 106-392. The program is implemented through several stakeholders under a cooperative agreement signed by the governors of Colorado, Utah, and Wyoming; the Department of Interior (DOI); and the Administrator of the Western Area Power Administration (WAPA). The recovery goals of the program are to reduce threats to species and improve their status, so they are eventually delisted from the ESA. Some past actions include providing adequate instream flows for fish funded through a portion of Upper Basin hydropower revenues from WAPA; FWS; the states of Colorado, Wyoming, and Utah; and water users, among others.

7.2.3.2 San Juan River Basin Recovery Implementation Program

The San Juan River Basin Recovery Implementation Program was established in 1992 to assist in the recovery of ESA-listed fish species in the San Juan River, the Colorado's largest tributary. The program is a partnership implemented under a cooperative agreement between DOI and the states of Colorado and New Mexico, the Jicarilla Apache Nation, the Navajo Nation, the Southern Ute Indian Tribe, and the Ute Mountain Ute Indian Tribe. It is concerned with the recovery of the Razorback sucker (Xyrauchen texanus) and Colorado pikeminnow (Ptychocheilus Lucius). Congress authorized this program in P.L. 106-392 with the aim to protect the genetic integrity and population of listed species, conserve and restore habitat (including water quality), reduce nonnative species, and monitor species. The Recovery Program is coordinated by FWS. The US Bureau of Reclamation is responsible for operating the Animas-La Plata Project and Navajo Dam on the San Juan River in a way that reduces effects on the fish populations. The program is funded by a portion of revenues from power generation, USBR, participating states, and the Bureau of Indian Affairs. Recovery efforts for listed fish are coordinated with the Upper Colorado River Program discussed above.

7.2.3.3 Glen Canyon Dam Adaptive Management Program

The Glen Canyon Dam Adaptive Management Program was established in 1997 in response to a directive from Congress under the Grand Canyon Protection Act of 1992 (P.L. 102-575) to operate Glen Canyon Dam "in such a manner as to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established." This program uses experiments to determine how water flows affect natural resources south of the dam. The US Bureau of Reclamation (USBR) is charged with modifying flows for experiments, and the U.S. Geological Survey (USGS) conducts monitoring and other studies to evaluate the effects of the flows. The results are expected to better inform managers how to provide water deliveries and conserve species. The majority of this program's funding comes from hydropower revenues generated at Glen Canyon Dam.

7.2.3.4 Lower Colorado Multi-Species Conservation Program (MSCP)

The MSCP is a multistakeholder initiative to conserve 27 species (8 listed under ESA) along the Lower Colorado River while maintaining water and power supplies for farmers, tribes, industries, and urban residents. The MSCP began in 2005 and is planned to last for at least 50 years. The MSCP was created through consultation under ESA. To achieve compliance under ESA, federal entities involved in managing water supplies in the Lower Colorado River Basin met with resource agencies from Arizona, California, and Nevada; Native American Tribes; environmental groups; and recreation interests, to develop a program to conserve species along a portion of the Colorado River. A biological opinion (BiOp) issued by the US Fish and Wildlife Service (FWS) in 1997 served as a basis for the program. Modifications to the 1997 BiOp were made in 2002, and in 2005, the BiOp was renewed for 50 years. Nonfederal entities received an incidental take permit under Section 10(a) of the ESA for their activities in 2005 and shortly thereafter implemented a habitat conservation plan.

The objective of the MSCP is to create habitat for listed species, augment the populations of species listed under ESA, maintain current and future water diversions and power production, and abide by the incidental take authorizations for listed species under the ESA. The estimated total cost of the program over its lifetime was approximately $626 million in 2003 dollars (updated to $882 million in 2018) and is to be split evenly between the USBR (50%) and the states of California, Nevada, and Arizona (which collectively fund the remaining 50%). The management and implementation of the MSCP is the responsibility of the USBR, in consultation with a steering committee of stakeholders.

7.2.4 Water Quality

Salinity and water quality are long-standing issues in the Colorado River Basin. Parts of the Upper Basin are covered by salt-bearing shale (which increases salt content in water inflows), and salinity content increases as the river flows downstream due to both natural leaching and return flows from agricultural irrigation. The 1944 U.S.-Mexico Water Treaty did not set water quality or salinity standards in the Colorado River Basin. However, after years of dispute between the United States and Mexico regarding the salinity of the water reaching Mexico's border, the two countries reached an agreement on August 30, 1973, with the signing of Minute 242 of the International Boundary and Water Commission. The agreement guarantees Mexico that the average salinity of its treaty deliveries will be no more than 115 parts per million higher than the salt content of the water diverted to the All-American Canal at Imperial Dam in Southern California.

To control the salinity of Colorado River water in accordance with this agreement, Congress passed the Colorado River Basin Salinity Control Act of 1974 (P.L. 93-320), which authorized desalting and salinity control facilities to improve Colorado River water quality. The most prominent of these facilities is the Yuma Desalting Plant, which was largely completed in 1992 but has never operated at capacity. In 1974, the seven basin states also established water quality standards for salinity through the Colorado River Basin Salinity Control Forum.

Another basin water quality problem is Quagga mussels, which are an invasive species first detected in 2007 in Lake Mead. This species of mussels forms massive colonies in short periods of time, disrupting ecosystems and blocking water intakes. They can also cause significant disruption and damage to water distribution systems. Controlling the spread and impacts of this invasive species within the CRA requires extensive maintenance and results in reduced operational flexibility.

7.2.4.1 Imported Water

IID annually coordinates with a state certified laboratory for the collection and analysis of Title 22 (of the California Code of Regulations) source water samples as a service to local public water treatment systems in facilitating the annual production of Consumer Confidence Reports (CCR).[70] The data and a share of the incurred costs are forwarded to all of participants in the Title 22 Joint Watershed Monitoring Program.

The All-American Canal (AAC) and three main supply canals (East Highline, Central Main, and Westside Main) are sampled each year for numerous constituents as required by law and in coordination with the State Water Resources Control Board's Division of Drinking Water, formerly known as the Drinking Water Field Operations Branch of the California Department of Health Services.

An enhanced monitoring program was implemented in 2018 under the direction of the Division of Drinking Water. The revised program includes 21 additional sampling locations which will be monitored annually over a period of four years to help characterize the raw source water to meet state requirements.[71]

7.2.5 Climate Change

Water supply planning has largely been based on historical hydrological data as a foundation for both the severity and frequency of drought conditions and the frequency and abundance of above-normal rainfall years. Climate change threatens to shift weather patterns and thus adds uncertainty to water supply planning. Research has identified areas of concern regarding California water supply including reduced snowpack, increased intensity of extreme weather events, prolonged drought periods, changes in runoff patterns, rising sea levels, and changes in water demand levels and patterns. Though it is not possible to measure the risk associated with climate change, water supply reliability is more secure with a long-term plan that recognizes such risk and provides the development of resources to offset that risk.

The City of El Centro obtains all its water supply from the Colorado River via purchases from IID. Before reaching IID and the City, that water flows from the upper basin states (Colorado, Wyoming, and Utah) and through the lower basin states (Arizona, Nevada, and California) before entering Mexico on its way to the Gulf of California. Under the Law of the River, Colorado River water supply imported by IID is quite secure and reliable because of the seniority of the IID water rights.

Many studies have been carried out on the potential effects of climate change on the Colorado River as cited in IID's IRWMP.[72] Those studies clearly indicate water deficits must exceed the upper Colorado River Basin states' allocation before lower states' apportionment (including IID's apportionment) are reduced. Also, the large volume of available reservoir storage on the Colorado River in Lake Mead and Powell buffer the potential climate change effects related to timing of flows that might occur if there were to be changes in the ratio of snow to rainfall. A reduction in the volume of water available to IID (and hence to the City of El Centro) is not envisioned even under the most extreme climate scenarios. Finally, due to IID's historic water rights, reductions in Colorado River water supply would be absorbed by junior water rights holders prior to effecting IID's supply, the City of El Centro and the greater Imperial Region. Consequently, climate change poses a limited direct threat to the volume or timing of IID and the Imperial Region water supply from the Colorado River.

[70] The City's most recent published CCR is available on their website: http://www.cityofelcentro.org/userfiles/CCR2019CA1310004%20(3).pdf
[71] Source: Information in this Section has been extracted from the IID website – https://www.iid.com/water/water-supply/water-quality
[72] Source: From Appendix O to the IID IRWMP - https://www.iid.com/home/showpublisheddocument?id=9547

7.3 Water Service Reliability

An important caveat for IID Colorado River water accounting is that, under the Law of the River and the QSA/Transfer Agreements, consumptive use is not the same as delivery. Table 6-0 C (IID Net Consumptive Use Schedule 2003-2077 extracted from CRWDA Exhibit B) shows IID's Priority 3(a) Quantified Amount (Column 2), IID Reductions (Columns 3-9), IID Total Reduction (Column 10) and IID Net Consumptive Use Amount (Column 11), all volumes at Imperial Dam. This exhibit regulates IID's annual supply and accounts for IID's water transfer and other obligations.

In years when agricultural demand is higher than the projected use with conservation, as in years of low rainfall or due to market driven cropping choices, IID water use may exceed the quantified amount. If there are not drought conditions on the Colorado River, IID has up to three years under the IOPP to pay that water back. However, in years of drought (Lake Mead water level at 1125 feet or lower), the 2007 Interim Guidelines come into effect and outstanding overruns must be paid back in the calendar year following publication of the overrun in the USBR LCR Decree Accounting Report.

7.3.1 Average Year and Dry Year Supply and Demand Reliability Comparison

Due to IID annual consumptive use limits under the QSA/Transfer Agreements, water supplies during a normal year are best represented by the CRWDA net consumptive use amount shown in Column 11 of Table 6-0 C (IID Net Consumptive Use Schedule 2003-2077 extracted from CRWDA Exhibit B). These annual values, plus an adjustment for normal rainfall of 3 inches/year, represent the maximum available supply for each year. IID suggests that Table 6-0 C, which assumes full use of IID's quantified water supply, be used in determining base normal year water availability. As can be seen from Table 6-0 C, IID's Net Available Consumptive Use (Column 11) has or will range from a high of 2.978.2 KAF in 2003 to a low of 2,480.9 KAF in 2015. Assuming IID does not elect termination of the Agreement in 2038, the District's Average Net Available Consumptive Entitlement for the period 2003 through 2077 is 2,657.1 KAF.

7.3.1.1 Water Management Under EDP Apportionment

On January 1, 2013, the water level in Lake Mead was 1120.5 feet, and for the first time since the IOPP came into effect, Lower Colorado River Basin water users faced a shortage condition (Figure 7-1). For IID, this means that outstanding overruns had to be paid back to the river in calendar years 2013 and 2014 as described below and shown in Table 7-1A.

IID's maximum allowable cumulative overrun account is 62,000 AF.[73] Thus, for IID's 2011 overrun of 82,662 AF (which was published in 2012), 62,000 AF were to be paid back at the river in calendar year 2013, with the remaining 20,662 AF to be paid back in 2014; however, due to an early payback of 6,290 AF in 2012, IID had 55,710 AF to pay back in 2013 with 20,662 AF of the 2011 overrun paid back in 2014. In addition, because of the low level of Lake Mead on Jan 1, 2013, IID's entire 2012 overrun of 134,076 AF had to be paid back in 2014, for a total of 154,738 AF in 2014. Furthermore, under the terms of the IOPP, no overruns are allowed in a year when payback is required. IID has not experienced any overrun pay back since 2014.

The 2013 IOPP payback obligation and prohibition on overruns in payback years, led the IID Board to

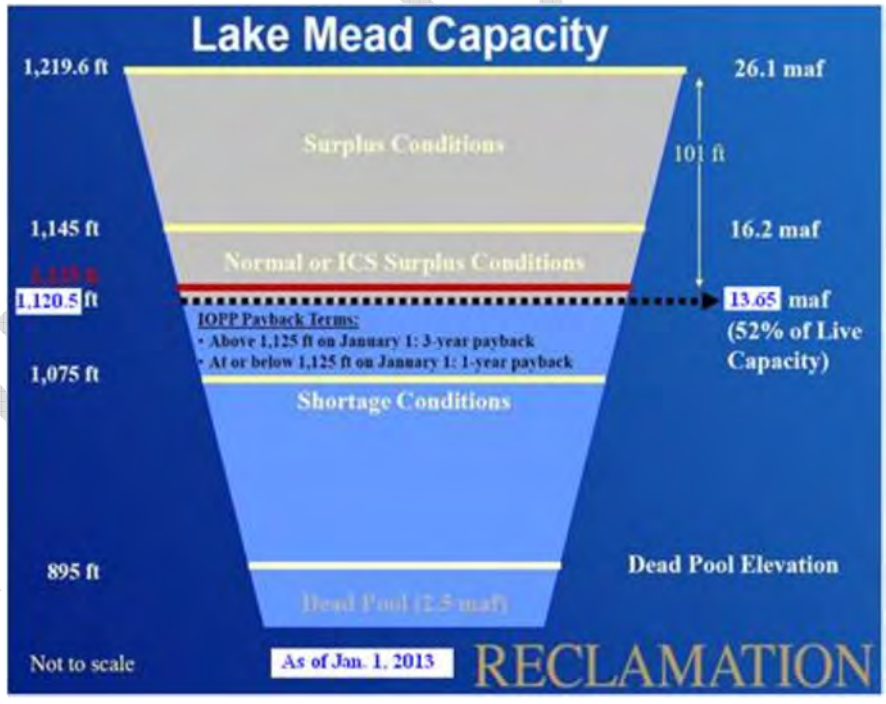
[73] For IID Quantified Amount: 3.1 MAFY *10 percent = 310,000 AF allowable cumulative overrun account amount; minimum repayment in a calendar year is the lesser of 310,000 * 20 percent = 62,000 or the amount in the account, if less than 62,000 AF.

implement an apportionment program pursuant to the 2009 Regulations for EDP, which were subsequently revised and modified. The Revised 2013 EDP version was approved and adopted by the IID Board on October 28, 2013. The Revised 2013 EDP also establishes an agriculture water clearinghouse to facilitate the movement of apportioned water between agricultural water users and between farm units. This is to allow growers and IID to balance water demands for different types of crops and soils with the apportionments made. IID's Water Conservation Committee agreed on a July 1, 2013 start date for the agricultural water clearinghouse.

Table 7-1 A. IID Inadvertent Overrun Payback to the Colorado River under the IOPP, 2012-2020

Table 7-1 A: IID Inadvertent Overrun Payback to the Colorado River under the IOPP, 2012-2020[74]			
Calendar Year of Payback	**2011 Overrun Payback (AF)**	**2012 Overrun Payback (AF)**	**Payback Total for Calendar Year (AF)**
2013	55,710	-	55,710
2014	20,662	134,076	154,738
Total Payback	**76,372**	**134,076**	**210,448**

Figure 7-1 Lake Mead IOPP Schematic



[74] Notes: All values are consumptive use volumes at Imperial Dam (AF). 2013 Payback Total was 62 KAF, but in 2012 IID had 6,290 AF of early payback, reducing volume to 55,710 AF.

7.3.1.2 Average Year and Single Dry Year Demands

A single-dry year is defined as a single year of no to minimal rainfall within a period that average precipitation is expected to occur. Because of the low rainfall in the IID water service area, dry and multiple-dry water year analysis assumes one of the following scenarios is in effect:

1. USBR has declared a normal condition for deliveries to the Colorado River Lower Basin, and rainfall is scarce and creates drier than normal local conditions in the IID water service area. The year 2006 with 0.42 inches of rain was the lowest precipitation year since 2003 and was also well below the 89-year average of 2.54 inches.[75] This coupled with the relatively high IID consumptive use of Colorado River water in 2006 is therefore deemed the "dry" water year.
2. USBR has declared a normal condition for deliveries to the Colorado River Lower Basin, and an apportionment has been declared by IID's Board of Directors for the year.
3. USBR has declared a shortage for deliveries to the Colorado River Lower Basin, IID has outstanding overruns to pay back to the river, and an apportionment is in effect with or without conditions similar to those in 2012 IWSP Water Agreement.

On November 28, 2006, the IID Board of Directors adopted Resolution No 22-2006 approving development and implementation of an Equitable Distribution Plan to deal with times when customers' demand would exceed IID's Colorado River supply, such as scenarios 2 and 3, above. As part of this Resolution, the IID Board directed the General Manager to prepare the rules and regulations necessary or appropriate to implement the plan within the District, which the board adopted in November 2006.

The IID 2013 Revised EDP, adopted by the Board on October 28, 2013, allows IID to pay back its outstanding overruns using EDP Apportionment, and it is expected that an annual EDP Apportionment will be established for each of the next several years, if not for the duration of the QSA/Transfer Agreements. For purposes of this UWMP, years with a shortage condition that impacts non-agricultural projects such as an IOPP payback obligation constitute "dry" years for IID.

As previously noted, IID's EDP was legally challenged in 2013 and was temporarily suspended by IID Board action in 2018 until such time as the outstanding issues could be amicably resolved. A resolution has been reached following recent lower and appellate court rulings and it is anticipated a revised EDP will be issued in the coming year. IID staff indicated they expect the revised EDP will be similar in nature to the 2013 EDP and will probably incorporate about 80 percent of the prior provisions.

For single-dry year and multiple-dry water year assessments, IID's soon-to-be reissued EDP will govern. IOPP payback, EDP Apportionment, and the IWSP are further discussed under single-dry and multiple-dry year projections.

- Average or Normal Year – In the case of demand, IID staff noted that, generally speaking, an inch of rainfall over the IID service area can result in a 40,000 to 60,000 AF reduction in IID's consumptive use of Colorado River water as measured at Imperial Dam. According to WRCC Data, Calendar year 2008 had an annual rainfall of 2.60 inches – the closest over the past two decades

[75] Source: Data obtained from Western Regional Climate Center (WRCC), Desert Research Institute, Reno, Nevada (http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca2713); WRCC program administered by the National Oceanic and Atmospheric Administration (NOAA); data extracted from monitoring Station 042713 at El Centro 2 SSW, CA for period 3/01/1932 through 4/20/2021 (Refer to link for monthly precipitation listings/monthly totals)

to the 89-year average of 2.54 inches. For this reason, 2008 has been selected as the "Normal" or "Average" year for this 2020 UWMP. IID's projected Net Consumptive Use (CRWDA Exhibit B) amount in 2008 was 2,825,100 AF (see Table 6-0 C).

- Single Dry-Year – The year 2006 was selected as the "Single Dry-Year because it had the lowest annual rainfall over the past two decades (0.42 inches). IID's projected Net Consumptive Use was 2,909,700 AF; actual Net Consumptive Use was 2,909,680 AF (USBR 2006 Decree Accounting report)[76], with an overrun of 18,914 AF for a total of 2,928,594 AF). Agronomic and/or agricultural economic conditions always influence individual farm management decisions and practices and, thus, impacted water use in 2006.

For this UWMP, it is assumed that, during a "Dry" year, water availability to Imperial Valley water users will be 50,000 AF less for every inch of rainfall less than normal year rainfall (i.e., the 89-year average of 2.54 inches). That in turn, could reduce consumptive use of Colorado River water, especially in a year when an inadvertent overrun is not allowed because a payback and an EDP Apportionment is in effect. Given that the IID system and AAC "losses" are the same in normal, wet or dry years; and using 2008 as a base, the following "Normal Year" and "Dry Year" values can be calculated:

Average or Normal Year:

- 2008 Net Consumptive Use (CRWDA Exhibit B, at Imperial Dam) = 2,825,100 AF
- 2008 Effective Rainfall Impact (Imperial Valley) = (2.60 inches) x (50,000 AF) = 130,000 AF
- 2008 "Average Year" Water Availability = 2,825,100 AF + 130,000 AF = 2,955,000 AF less any IID system and AAC "losses"

Dry Year:

- 2006 Net Consumptive Use (CRWDA Exhibit B, at Imperial Dam) + Overrun = 2,928,594 (from above)
- 2006 Effective Rainfall Impact (Imperial Valley) = (0.42 inches) x (50,000 AF) = 21,000 AF
- 2006 "Dry Year" Water Availability = 2,928,594 AF + 21,000 AF = 2,949,594 AF less IID System and AAC "losses"

The above calculations illustrate there is very little difference in total IID water availability between a Dry Year and a Normal or Average Year (5,406 AF). This is primarily due to IID's Law of the River entitlements as set forth in Table 6-0 C. However, because there is very little difference in rainfall between a Dry Year and a Normal Year in the arid Imperial Valley, the impact of agricultural economic decisions may override this small distinction.

Note that while effective rainfall may or may not reduce the amount of Colorado River water needed by agricultural and urban users, it will positively impact the Salton Sea. Effective rainfall has no measurable impact on residential, industrial, or commercial use of Colorado River water.

[76] Source: USBR Colorado River Accounting and Water Use, Arizona, California, and Nevada, Calendar Year 2006 Revised (page 32) – https://www.usbr.gov/lc/region/g4000/4200Rpts/DecreeRpt/2006/2006.pdf

7.3.2 Comparison of Average, Single-Dry and Five Consecutive Dry Years

Multiple-dry years are defined as five or more consecutive years with minimal rainfall within a period of average precipitation. A review of El Centro rainfall records dating back to 1975 identified only one five-year period (1998-2002) during which rainfall fell below the 2.54 inch average for five consecutive years.

For many California water agencies, the five consecutive dry years likely occurred between 2012-2016 during one of California most significant historical droughts. In the case of El Centro, total rainfall during the 1998-2002 period measured 5.66 inches. This compares with 10.05 inches during the 2012-2016 period, when annual rainfall actually exceeded the 2.54 inch long-term average in both 2013 and 2015. This is because El Centro is situated in a very dry arid region with little annual rainfall, where weather patterns differ substantially from other higher rainfall areas of the State.

As discussed above, the Revised 2013 Equitable Distribution Plan (and the pending revisions to that plan (following recent court rulings resolving past litigation) is the mechanism by which Apportionment will be administered for dry-year supplies. Based on EDP protocol, cuts in supply to non-M&I users will be the first to be implemented and while M&I users will be asked to conserve water, their supply will not be reduced.

Basis of water year data and percent of average supply available for an average year, dry year, and multiple dry-year conditions are shown in Table 7-1. The percent of average supply available is based on the City's actual water supply for each of the historical periods indicated. Base year supply to the City is provided in Table 7-1 for reference in calculating the projected percentage of average supply available during single-dry and five consecutive dry year periods. The volumes do not necessarily represent the supply available in future years. While the available volumes presented in the table vary somewhat, IID's total available supply remains extremely reliable based its Law of the River legal entitlements dating back more than 100 years. Consequently, El Centro's water supply, which is provided in full by IID, is also very reliable for the foreseeable future.

Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type	Base Year	Available Supplies if Year Type Repeats	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP.
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Base Year Supply[77] (AFY)	% of Average Supply
Average Year	2008	9,034	100%
Single-Dry Year	2006	9,677	107%
Consecutive Dry Years 1st Year	1998	8,481	94%
Consecutive Dry Years 2nd Year	1999	8,592	95%
Consecutive Dry Years 3rd Year	2000	8,792	97%
Consecutive Dry Years 4th Year	2001	8,760	97%
Consecutive Dry Years 5th Year	2002	8,837	98%

7.3.3 Supply Diversification

While the City purchases 100% of its water supply from a single entity (IID), that agency's entitlement to Colorado River water is extremely reliable based on various Law of the River legal precedents dating back to 1885. It is also important to note that as agricultural areas of Imperial County transition to non-agricultural uses, water use (on a per acre basis) will typically decline, thus increasing the reliability of available supplies.

7.4 Supply and Demand Assessment

A comparison between the supply and demand for projected years between 2025 and 2045 is shown in Table 7.2. Given that 100 percent of the City's demand is met through Colorado River water purchased from IID, and given the extreme reliability of that water source, IID will be able to meet El Centro's demands in all projected years through 2045. Therefore, the Supply and Demand entries are the same in each year resulting in a zero difference in all years through 2045.

[77] Base year supply to the City is provided here for reference in calculating the projected percentage of average supply available during single-dry and five consecutive dry year periods. The volumes do not necessarily represent the supply available in future years.

Table 7-2: Normal Year Supply and Demand Comparison (AF)

Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison (AF)					
	2025	2030	2035	2040	2045
Supply totals (from Table 6-9)	7,905	8,143	8,334	8,755	9,176
Demand totals (from Table 4-3)	7,905	8,143	8,334	8,755	9,176
Difference	0	0	0	0	0

Comparisons between supply and demand in a single dry year and multiple dry years are shown in Tables 7-3 and 7-4 respectively. Again, due to the extreme reliability of IID's Colorado River water source, available supplies purchased from IID will meet projected demands in all years through 2045.

Table 7-3: Single Dry Year Supply and Demand Comparison (AF)

Table 7-3: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045
Supply totals	8,458	8,713	8,917	9,368	9,818
Demand totals	8,458	8,713	8,917	9,368	9,818
Difference	0	0	0	0	0

Table 7-4: Multiple Dry Years Supply and Demand Comparison (AF)

Table 7-4: Multiple Dry Years Supply and Demand Comparison						
		2025	2030	2035	2040	2045
First year	Supply totals	7,431	7,654	7,834	8,230	8,625
	Demand totals	7,431	7,654	7,834	8,230	8,625
	Difference	0	0	0	0	0
Second year	Supply totals	7,510	7,736	7,917	8,317	8,717
	Demand totals	7,510	7,736	7,917	8,317	8,717
	Difference	0	0	0	0	0
Third year	Supply totals	7,668	7,899	8,084	8,492	8,901
	Demand totals	7,668	7,899	8,084	8,492	8,901
	Difference	0	0	0	0	0
Fourth year	Supply totals	7,668	7,899	8,084	8,492	8,901
	Demand totals	7,668	7,899	8,084	8,492	8,901
	Difference	0	0	0	0	0
Fifth year	Supply totals	7,747	7,980	8,167	8,580	8,992
	Demand totals	7,747	7,980	8,167	8,580	8,992
	Difference	0	0	0	0	0

7.5 Drought Risk Assessment

The CWC requires every urban water supplier to include, as part of its UWMP, a drought risk assessment (DRA) for its water service area. This water supplier can then consider this information when developing its demand management measures and water supply projects and programs. The DRA allows suppliers to consider how to manage water supplies during dry hydrologic conditions while taking variation in demand into account. This process helps a supplier evaluate its WSCP and anticipate appropriate shortage response actions prior to experiencing an actual extended drought period.

The CWC requires the DRA to be based on the driest five-year historic sequence for the agency's water supply. By code, the analysis must also consider plausible changes in projected supplies and demands due to climate change, anticipated regulatory changes, and other applicable criteria.

The five-year drought period for the DRA is estimated in the same manner as the multiple dry year analysis in the Supply and Demand Assessment presented in Section 7.4. The drought is represented based on the five driest years shown in Table 7-1 (1998-2002). The dry year unconstrained demand is estimated as a percentage of the normal year demand for the same period. The normal year demand forecast is described in Chapter 4 and is based on SCAG and DOF demographic projections and baseline conservation. The Normal or Average year demands for the intermediate years between 2020 and 2025 were calculated by interpolation between actual 2020 data and 2025 projections.

Table 7-5 A shows a summary of supply and demand for the DRA period from 2021 to 2025.

Table 7-5 A: DRA Supply and Demand by Source (AFY)

Table 7-5A: DRA Supply and Demand by Source (AFY)					
Demand	**2021**	**2022**	**2023**	**2024**	**2025**
Average Year Potable	7,645	7,710	7,775	7,840	7,905
Dry-Year Potable	8,065	8,134	8,203	8,271	8,458
Recycled	0	0	0	0	0
DRA Demand	8,065	8,134	8,203	8,271	8,458
Supply	**2021**	**2022**	**2023**	**2024**	**2025**
Imported Water	8,065	8,134	8,203	8,271	8,458
Recycled	0	0	0	0	0
DRA Supply	8,065	8,134	8,203	8,271	8,458

IID projects sufficient supply to meet all demands over the next five years under both normal conditions and drought conditions. The City's DRA presented in Table 7-5 demonstrates water supply reliability during a long-term drought scenario occurring over the next five years. No water shortage is projected that would trigger Water Shortage Contingency Plan Actions (discussed in Chapter 8). Although unlikely, this DRA will be modified between UWMP cycles if necessary, should a change in forecasted supplies be projected.

Table 7-5 presents the Five-Year Drought Risk Assessments for the next five years, i.e., 2021-2025. The total water use for each year was extracted from the DRA Demand entries in Table 7-5 A and the percent of average demands for each of the five consecutive drought years (i.e., 94%, 95%, 97%, 97% and 98%, for years, 1-5, respectively) as presented in Table 7-1. In other words, in Year 1 (assumed to be 2021) of the five-year drought period, the demand would be (average demand of 7,645 AFY) x (94% of average demand in drought year 1) = 7,186 AFY, while Year 2 = (7,710 x 95%) or 7,325 AFY, etc.

As was the case in Table 7-5 A, DRA supplies equal DRA demands in all cases (i.e., Years 1-5) because of the extreme reliability of the IID supplies. Thus, there are no projected shortfalls or planned WSCP action through 2045.

Table 7-5: Five-Year Drought Risk Assessment Tables

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)	
2021	**Total**
Total Water Use	7,186
Total Supplies	7,186
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2022	**Total**
Total Water Use	7,325
Total Supplies	7,325
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2023	**Total**
Total Water Use	7,542
Total Supplies	7,542
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2024	**Total**
Total Water Use	7,605
Total Supplies	7,605
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2025	**Total**
Total Water Use	7,835
Total Supplies	7,835
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

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8 WATER SHORTAGE CONTINGENCY PLAN

California Water Code Section 10632 requires suppliers to prepare and adopt a Water Shortage Contingency Plan (WSCP) consisting of each of the following elements:

8.1 Water Supply Reliability Analysis

8.2 Annual Water Supply and Demand Assessment Procedures

8.3 Six Standard Water Shortage Stages

8.4 Shortage Response Actions

8.5 Communication Protocols

8.6 Compliance and Enforcement

8.7 Legal Authorities

8.8 Financial Consequences of WSCP Activation

8.9 Monitoring and Reporting

8.10 WSCP Refinement Procedures

8.11 Special Water Feature Distinction

8.12 Plan Adoption, Submittal, and Availability

The WSCP presented in this Chapter follows this outline.

8.1 Water Supply Reliability Analysis

Water supplies may be interrupted or reduced by droughts, earthquakes, and power outages which hinder a water agency's ability to effectively deliver water. Drought impacts increase with the length of a drought, as supplies in reservoirs and other storage programs are depleted and water levels in groundwater basins (where present) decline. The ability to manage water supplies in times of drought or other emergencies is an important part of water resource management for a community. In anticipation of such water supply challenges; the Water Code requires suppliers to prepare and adopt a Water Shortage Contingency Plan (WSCP), which includes water shortage response actions they would take in response to six standard levels of water shortage. This WSCP describes the water supply shortage policies the City has in place to respond to events including reductions and catastrophic interruption in water supply.

Every urban water supplier is required to assess the reliability of their water service to its customers under normal, dry, and multiple dry water years. The City depends solely on imported Colorado River water supplies, purchased from IID, to fully meet its demands. While there are various factors that could potentially impact Colorado River supplies (e.g., legal, environmental, water quality and climatic, all of which are discussed in Section 7.2 of this 2020 UWMP), IID has taken many proactive steps over the years to protect the integrity and legal authority of its Colorado River entitlements under the Law of the River provisions dating back for almost a century.

The long-term supply and demand assessment to year 2045 is included in Section 7.4 of this UWMP. As noted in Section 7.4, the City anticipates being able to meet all water demands with adequate supplies through the year 2045 under normal, dry, and multiple dry year conditions.

The Drought Risk Assessment (DRA) for the next five years is included in Section 7.5 of this UWMP. As noted in Section 7.5, there are no shortages projected if a drought were to occur over the next five years, thus, no shortfall mitigation measures are anticipated.

8.2 Annual Water Supply and Demand Assessment Procedures

Beginning in 2022, each supplier is required to prepare and submit to DWR an Annual Water Supply and Demand Assessment (AWSDA or Annual Assessment) on or before July 1 of each year. The Annual Assessment and associated reporting are to be conducted based on procedures outlined in this section.

8.2.1 Decision-Making Process

The Annual Assessment will be prepared by the Public Works Department and presented to the City Manager for formal approval. A presentation will be given to the City Council and recommendations will be made for any water shortage response actions, if appropriate.

During the Annual Assessment, or during any subsequent unexpected water shortage period, Public Works will determine the extent of the conservation required based on water supply availability from IID's Colorado River imported supplies. The City Manager will be requested to approve the Annual Assessment and any associated actions. In the event of a water shortage, the City Manager will request the City Council to adopt a Water Reduction Plan, and any associated recommended actions, that are necessary to address the level of water shortage. The City's shortage levels and corresponding Water Reduction Plan response actions are outlined in Section 8.4 of this WSCP and adopted in the City's water conservation Ordinance 17-01[78].

The Annual Assessment process will begin in January each year with the evaluation of supply and demand data along with current water supply conditions. A preliminary report will be presented to the City Manager and other appropriate Division Heads for their review by late March. A revised Draft Assessment will be prepared by late April, based on input from the City Manager and other key City staff members. The City Manager and Division Heads will determine any necessary shortage response actions and prepare a Final Draft Assessment by the end of May. If shortage levels are required, the City Council will be asked to set the appropriate level and response actions, as needed. Once approved, the Annual Assessment Report must be submitted to DWR by the July 1 deadline. Table 8-1 A presents a timeline and summary of these steps.

8.2.2 Data and Methodologies

The purpose of the Annual Assessment is to evaluate the water supply reliability for the coming year by assuming conditions will be dry and to determine how a perceived shortage may relate to WSCP shortage stage response actions. This information will be based on information available to the City at the time of the analysis. The Annual Assessment will utilize information from IID on the expected supply of imported Colorado River water and will also consider the unconstrained water demand, planned water use, and

[78] Source: Ordinance No. 17-01 | Code of Ordinances | El Centro, CA | Municode Library

infrastructure conditions. The analysis will look at current year water supply and demand conditions and assumed dry year conditions for the following year. The conditions of what defines a dry year will be determined based on current information from available sources including IID, WRCC, USBR and other applicable sources. The subsequent evaluation will likely involve historic hydrology typically used in the dry-year analysis for UWMPs. The balance between projected water supplies and anticipated demand will be used to determine, what, if any, shortage stage is expected under the WSCP framework.

Table 8-1 B provides an example for the current year as a framework for reporting the current year and one subsequent dry-year supply and demand assessment. This format is not required and may be revised as needed. The water supply and demand data in Table 8-1 B are based on the DRA and Table 7-5 presented in Section 7.5 of the UWMP using the first year (2021) of the five-year drought period as the dry-year Annual Assessment (i.e., average year demand of 7,645 AFY for 2021 x 94% demand in the first year of a five-year drought = 7,186 AFY). The breakdown by customer type is assumed to be the same as the actual breakdown by customer type in 2020).

The following steps outline the procedures for completing the dry year supply and demand assessment.

1. Water Supply – Quantify water supply by each source for the current year and anticipated supply for the subsequent year. The City will rely on coordination with IID for projected supply availability.
2. Unconstrained Water Demands - Quantify unconstrained customer demand for the current year and one year to follow. Use current year water demand by sector (available from monthly billing data) and adjust as needed to account for weather, prior-year conditions, anticipated new demands for the coming year, and any other factors pertinent to the land use and customer use patterns.
3. Subsequent Dry Year Analysis - Determine how the following year's supply and demand quantities will be impacted anticipating the year will be dry. Determine dry year conditions using methods similar to those used in the UWMP, which consider historical hydrology, data from IID and any additional applicable sources.
4. Infrastructure Considerations - Evaluate infrastructure capabilities and any constraints within the City that may affect the ability to deliver supplies to meet expected demand in the coming year, including delays in constructing anticipated capital improvement projects.
5. Other Factors - Address any other applicable factors that may influence or disrupt supplies.
6. Evaluation - Compare the anticipated supply and demand that have been calculated for the following year assuming dry conditions to determine any potential shortage in supply and the appropriate response action as developed in the WSCP.

The above steps will be documented with supporting text including coordination with IID and other agencies, data sources, and assumptions.

Table 8-1 A: AWSDA Timeline and Recommended Actions

Table 8-1 A: AWSDA Timeline and Recommended Actions	
Month(s)	**Recommended Actions**
Data Gathering and Analysis Phase	
Jan	Assemble WSCP Team
Jan - Feb	Collect water supply by source data for current year; describe and quantify sources by provider along with any current constraints and related adjustments
Jan - Feb	Determine unconstrained water demand for current year; describe and quantify demand and any influencing factors on demand along with related adjustments
February	Quantify "Dry Year" supplies and demands based on historical hydrologic data and input from IID
February	Calculate the water supply reliability by comparing expected dry year supplies and demands to identify potential shortage. Utilize reporting spreadsheet.
March	Determine any shortage and related actions
March	Prepare and present preliminary report to City Manager and Division Heads for review and approval
Decision Phase	
April	Update Assessment based on input from City Manager and Division Heads; obtain final water supply data and other input from IID
May	If shortages are determined, use WSCP to determine protocol; recommend Water Reduction Plan based on shortage level
May	Prepare Final Draft Annual Water Shortage Assessment Report including Water Reduction Plan as needed
June	Present AWSDA Report to the City Manager for approval
By July 1	Send Final Annual Water Supply and Demand Assessment Report to DWR
As Needed	Implement WSCP Water Reduction Plan as needed and approved by City Council

Table 8-1 B: Example – 2021 Annual Assessment Supply and Demand Summary

Table 8-1 B: Example – 2021 Annual Assessment Supply and Demand Summary			
Current Year (2020) Actual Demands		**Projected Demands for Next Year (2021) (Year 1 of a Five-Year Drought)**	
Demands	**Total**	**Demands**	**Total**
Single Family	4,039	Single Family	4,074
Multi-Family	1,048	Multi-Family	1,057
Commercial	813	Commercial	820
Institutional/Governmental	435	Institutional/Governmental	439
Industrial	1	Industrial	1
Landscape Irrigation	771	Landscape Irrigation	778
Losses	473	Losses	476
Total Gross Demand	7,580	Total Projected Average Year Demand	7,645
WSCP/Other - use reduction benefit	0	Year 1 Dry-Year Demand Adjustment	0.94
Unconstrained Water Demand	7,580	Unconstrained Dry-Year Demand	7,186
Total Demand	**7,580**	**Total Demand**	**7,186**
Purchased or Imported Water	7,580	Purchased or Imported Water	7,186
Total Supplies	7,580	Total Supplies	7,186
Surplus/Shortfall w/o WSCP Action	0	Surplus/Shortfall w/o WSCP Action	0
Current WSCP Shortage Level	**1**	**Planned WSCP Shortage Level**	**1**
WSCP - supply augmentation benefit	0	WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0	WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0	Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0	Resulting % Use Reduction from WSCP action	0

8.3 Six Standard Water Shortage Stages

The WSCP is framed around six standard shortage levels set forth in California Water Code Section 10632(a)(3).[79] Those six standard shortage levels correspond to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages, and greater than 50 percent shortages. Each of the six shortage levels represents an increasing gap between the City's estimated supplies and the unconstrained demand as determined in the Annual Assessment or the gap between supply and demand at any time due to an unforeseen event that interrupts water supplies. A supplier's existing WSCP may use different water shortage levels, providing they develop a cross-reference relating the supplier's existing categories to the six standard water shortage levels specified in the CWC.

The City has established five water shortage levels as presented in Table 8-1. Table 8-1 also references the water supply conditions, which lead to a declaration of the individual water shortage stages and the

[79] Source: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=10632

response actions taken following that declaration. The five water shortage levels used in this WSCP are referenced in Table 8-1 and graphically cross-referenced to the six CWC standard levels in Figure 8-1.

Table 8-1: Water Shortage Contingency Plan Levels

Table 8-1: Water Shortage Contingency Plan Levels		
Shortage Level	**Percent Shortage**	**Shortage Response Actions**
1	≤ 10%	Projected supply is adequate or projected supply is insufficient to provide 90% of normal demand or contamination of 5% of water supply. Actions: 1. Landscape runoff prohibited 2. CII lodging must offer to opt out of linen service 3. Restaurants may only serve water upon request 4. Water features must recirculate 5. Customers must repair leaks in a timely manner 6. Automatic shutoff of hoses 7. Prohibit use of potable water for washing hard surfaces 8. Expand public information campaign 9. Voluntary plumbing fixture replacement
2	20%	Projected supply insufficient to provide 80% of normal demand or contamination of 10% of water supply. Actions (All Shortage Level 1 Restrictions plus these added actions): 1. Limit landscaping irrigation to specific times (< 10 a.m. or after 6 p.m.) 2. Limit landscape irrigation to specific days (3 days/week June 1-Sept 15; 2 days other times) 3. Watering of permanent trees allowed as necessary to keep them alive 4. Prohibit use of potable water for construction and dust control 5. Implement water allocations based on 2013 usage minus conservation 6. Improve customer billing 7. Provide rebates on plumbing fixtures, landscape irrigation and turf replacement as funding allows 8. Decrease line flushing 9. Increase water waste patrols 10. Implement drought surcharges and penalties
3	30%	Projected supply insufficient to provide 70% of normal demand or contamination of 20% of water supply. Actions (All Shortage Level 1-2 Restrictions plus these added actions): 1. Water features may not be filled or replenished 2. Prohibit vehicle washing except at facilities using recycled or recirculating water 3. Implement or modify drought rate structure (25% rate increase) 4. Require flow restrictors for washers
4	40%	Projected supply insufficient to provide 60% of normal demand or contamination of 30% of water supply. Actions (All Shortage Level 1-3 Restrictions plus these added actions): 1. No watering of lawns or irrigation 2. No issuance of new construction meters 3. Moratorium or net zero demand increase on new connections 4. 50% rate increase and penalties for excess use
5	≥ 50%	Projected supply insufficient to provide 50% of normal demand or contamination of 40% of water supply, Actions (All Shortage Level 1-4 Restrictions plus these added actions): 1. 100% rate increase and penalties for excess use 2. Revise water allocations and rate structures as needed

Figure 8-2: Corresponding Relationships Between El Centro's WSCP Shortage Levels and CWC's 2020 WSCP Standard Shortage Levels

El Centro's 2020 WSCP Stage	Supply Condition/Shortage		CWC 2020 WSCP Standard Shortage Levels	Shortage Levels
1	≤ 10%	→	1	≤ 10%
2	20%	→	2	10 – 20%
3	30%	→	3	20 – 30%
4	40%	→	4	30 – 40%
5	≥ 50%	→	5	40 – 50%
		→	6	> 50%

8.4 Shortage Response Actions

CWC requires the WSCP to contain shortage response actions that align with the defined shortage levels, and include:

- Demand reduction actions
- Supply augmentation actions
- Operational changes
- Mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions
- An estimate of the extent to which the gap between supplies and demand will be reduced by implementation of each action.

8.4.1 City's Demand Reduction Actions

When a Water Reduction Plan is not in effect, the City encourages all persons and entities within the service area to practice good potable water use by avoiding wasteful activities on a voluntary basis as specified in the City's water conservation Ordinance 17-01[80] and as further detailed in Chapter 28, Article III, Sections 28-50 through 28-55 of the El Centro City Code.[81]

A Water Reduction Plan will be implemented under water shortage conditions corresponding to the various shortage levels noted in Table 8-1. When necessary, City staff will make appropriate recommendations to the City Council regarding the adoption of a Water Reduction Plan if needed to address the level of water

[80] Source: Ordinance No. 17-01 | Code of Ordinances | El Centro, CA | Municode Library
[81] Source: https://library.municode.com/ca/el_centro/codes/code_of_ordinances?nodeId=CHCOTA_CH28WA

shortage, under Ordinance No. 17-01, based on the Annual Water Supply Assessment or other pertinent water shortage events.

Table 8-2 summarizes the City's demand reduction actions for each water shortage stage and provides an estimate of how much (by percentage of total water use) that action will reduce the overall shortage gap. Table 8-2 also notes whether a penalty, charge or other enforcement action will be assessed for non-compliance with the water restriction or prohibition.

The City's Water Conservation Ordinance No. 17-01 lists conservation requirements that will take effect upon implementation by the City Council. These prohibitions will promote the efficient use of water, reduce, or eliminate water waste, and enable implementation of the City's Water Shortage Contingency Measures. Water conservation measures become more restrictive with each progressive stage to address the increasing differential between water supply and customer demand.

Additional demand reduction actions, which are addressed in more detail in other sections of this WSCP, include the establishment of water conservation penalty rates and expanded public information efforts.

8.4.2 City's Supply Augmentation Actions

The City has only one source of supply, i.e., imported Colorado River water purchased from IID; however, as documented in Chapter 7 of this UWMP, that supply is extremely reliable based on IID's Law of the River entitlements. If there is a specified shortage in supply as referenced in Table 8-1, then it is assumed the City's Colorado River water supply has either been inexplicably impacted or there is a catastrophic event (either natural or man-made) impacting the transmission of Colorado River water to El Centro.

Table 8-3 lists actions the City can take to augment its water supply. The table includes three specific actions the City can take including:

- Expanding the Public Information Campaign during Shortage Level 1
- Improving Customer Billing during Shortage Level 2
- Implementing or Modifying the Drought Rate Structure or Surcharge during Shortage Levels 2, 3, 4 and 5.

8.4.3 City's Operational Changes

Operational response actions for a non-catastrophic water shortage, which are more fully described in other sections of this WSCP, may include the following:

- Improved water system monitoring and analysis
- More frequent tracking of customer water usage to aid in locating waste
- Increased frequency of reporting

8.4.4 City's Additional Mandatory Restrictions

There are no additional mandatory restrictions other than those outlined in Tables 8-1 and 8-2 and more fully detailed in Chapter 28, Article III, Sections 28-50 through 28-55 of the El Centro City Code.

Table 8-2: Demand Reduction Actions

Table 8-2: Demand Reduction Actions				
Shortage Level	**Demand Reduction Actions**	**How much is this Going to Reduce the Shortage Gap?**	**Additional Explanation or Reference**	**Penalty, Charge, or Other Enforcement?**
1	Landscape - Restrict or prohibit runoff from landscape irrigation	1.0%		Yes
1	CII - Lodging establishment must offer opt out of linen service	0.5%		Yes
1	CII - Restaurants may only serve water upon request	0.5%		Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	1.0%	Must use recycled or recirculated water	Yes
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	1.5%		Yes
1	Other - Require automatic shut of hoses	0.5%		Yes
1	Other - Prohibit use of potable water for washing hard surfaces	2.0%		Yes
1	Expand Public Info Campaign	3.0%		Yes
2	Landscape - Limit landscape irrigation to specific times	1.0%	Watering only allowed < 10 a.m. or > 6 p.m.	Yes
2	Landscape - Limit landscape irrigation to specific days	1.0%	3 days/wk. from June 1 to September 15; 2 days/wk. the rest of the year	Yes
2	Other - Prohibit use of potable water for construction and dust control	1.0%		Yes
2	Other	1.0%	Implement Water allocations based on average 2013 usage minus conservation savings	Yes
2	Improve Customer Billing	0.5%		Yes
2	Provide Rebates on Plumbing Fixtures and Devices	0.5%		Yes
2	Provide Rebates for Landscape Irrigation Efficiency	1.0%		Yes
2	Provide Rebates for Turf Replacement	1.0%		Yes
2	Decrease Line Flushing	1.0%		Yes
2	Increase Water Waste Patrols	1.0%		Yes
2	Implement or Modify Drought Rate Structure or Surcharge	1.0%		Yes

Table 8-2: Demand Reduction Actions (continued from prior page)				
Shortage Level	**Demand Reduction Actions**	**How Much is this Going to Reduce the Shortage Gap?**	**Additional Explanation or Reference**	**Penalty, Charge, or Other Enforcement?**
3	Other water feature or swimming pool restriction	2.0%		Yes
3	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	2.0%		Yes
3	Implement or Modify Drought Rate Structure or Surcharge	6.0%	25% Rate Increase	Yes
4	Landscape - Prohibit all landscape irrigation	5.0%		Yes
4	Other	1.0%	No issuance of new construction meters	Yes
4	Moratorium or Net Zero Demand Increase on New Connections	2.0%	50% rate increase and penalties for excessive use	Yes
4	Other	2.0%	50% Rate Increase and Higher Stage 4 penalties for excessive use	Yes
5	Other	5.0%	Higher Stage 5 penalties for excessive use	Yes
5	Other	5.0%	Revise Water Allocations and Rate Structure as Needed Including 100% rate increase	Yes

Table 8-3: Supply Augmentation and Other Actions

Table 8-3: Supply Augmentation and Other Actions			
Shortage Level	**Supply Augmentation Methods and Other Actions by Water Supplier**	**How Much is this Going to Reduce the Shortage Gap?**	**Additional Explanation or Reference**
1	Expand Public Information Campaign	3.0%	
2	Improve Customer Billing	0.5%	
2	Implement or Modify Drought Rate Structure or Surcharge	1.0%	
3	Implement or Modify Drought Rate Structure or Surcharge	6.0%	Includes 25% Rate Increase
4	Implement or Modify Drought Rate Structure or Surcharge	2.0%	Includes 50% Rate Increase
5	Implement or Modify Drought Rate Structure or Surcharge	5.0%	Includes 100% Rate Increase

8.4.5 City's Estimated Reduction in the Gap between Supplies and Demands Resulting from Each Responsive Action

As previously noted, Table 8-2 provides an estimate of the reduction in the gap between supplies and demands, which can be realized through implementation of the various individual water use restrictions or prohibitions. Those estimates vary from a low of 0.5% to a high of 6%, depending upon the prescribed action.

8.4.6 Stages of Action to Respond to a Water Shortage Event

As previously noted, Table 8-1 summarizes the City's five water shortage levels established by Ordinance 17-01. The City's specific actions in responding to a declared shortage stage are described in more detail in the following sections.

8.4.6.1 Stages of Water Use Restrictions

Each stage shall remain in effect until conditions indicate a more or less restrictive stage is necessary and action is taken by the City Council based on supply criteria identified in Table 8-1. The City Council may enact any stage and need not proceed in order through the stages.

1. Enacting Water Rate Restrictions:

   Stages 2-5 of the WSCP shall be enacted by the El Centro City Council declaring an emergency water restriction. Water supply conditions and goals for each restriction stage are outlined in Table 8-1.

2. Modifying and Ending Water Use Restrictions:

   For each month customer water use restrictions are in effect at Stage 2, 3, 4, or 5 under this WSCP, the City Manager shall report to the City Council on the status of the shortage and water use changes in the El Centro Water system, including a recommendation to maintain, change or end the water use restrictions. A water shortage event can be terminated by the City Council upon determination that "normal year" supplies have been secured by rainfall or other new supplies. A water shortage event involving sudden, unforeseen emergencies can be terminated by the City Manager or their designee upon a determination the emergency no longer exists. As soon as practicably possible, or at the next scheduled Council meeting, the City Manager or their designee shall share this termination decision with the City Council.

3. Water Rate Structure:

   Water rates will return to the rate structure prior to the water shortage event upon the termination of the event.

8.4.6.2 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. These priorities, which were originally established during development of the City's 2010 UWMP, are still reasonable and have therefore been carried over into this WSCP. Water allocations are established for all customers according to the following ranking system:

1. Minimum health and safety allocations for interior residential needs (including single family, multi-family, hospitals and convalescent facilities, retirement and mobile home communities, student housing, firefighting, and public safety);
2. Commercial, industrial, and 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);
3. Existing landscaping; and
4. New customers and proposed projects, which were without permits when a shortage is declared.

8.4.6.3 Health and Safety Requirements

Table 8-1 C displays per-capita health and safety water requirements. In Stages 1, 2 and 3 shortages, customers may adjust either interior or outdoor water use (or both), to meet voluntary and mandatory water reduction goals.

Table 8-1 C: Per Capita Health and Safety Water Quantity Calculations

Table 8-1A: Per-Capita Health and Safety Water Quantity Calculations						
Fixture	**Non-Conserving Fixtures**		**Habit Changes**[82]		**Conserving Fixtures**[83]	
Toilets	4 flushes x 3.5 GPF	14.0	3 flush x 3.5 GPF	10.5	4 flush x 1.6 GPF	6.4
Shower	5 min x 3.0 GPM	15.0	4 min x 3.0 GPM	12.0	5 min x 2.0	10.0
Washer	12.0 GPCD	12.0	11.0 GPCD	11.0	10.0 GPCD	10.0
Kitchen	4.0 GPCD	4.0	4.0 GPCD	3.0	4.0 GPCD	3.0
Other	4.0 GPCD	4.0	4.0 GPCD	4.0	4.0 GPCD	4.0
Gallons per person per day		49.0		40.5		33.4
CCF per person per year		24.0		20.0		16.0

However, under Stage 4 and Stage 5 mandatory rationing programs, the City has established a health and safety allotment of 50 GPCD (which translates to 18 billing Units per person per year, each billing Unit being 1,000 U.S. Gallons), 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 5 mandatory rationing, which is likely to be declared only as the result of a prolonged water shortage or due to a disaster, would require that customers make changes in their interior water use habits (e.g., not flushing toilets unless "necessary" or taking less frequent showers).

[82] Reduced shower use results from shorter length of shower and reduced flow. Reduced washer use results from fuller loads
[83] Fixtures include ULF 1.6 GPF toilets, 2.0 GPM showerheads, faucet aerators and efficient clothes washers

8.4.7 Prohibitions on End Users

The City has prohibitions on end uses related to each stage of the WSCP as shown in Tables 8-1 and 8-2. As previously noted, Table 8-2 also provides an estimate of how the noted demand reduction actions in the various stages will reduce the overall supply gap. Additionally, the table notes whether there is a penalty, charge, or other enforcement action for violation of the water restriction or prohibition.

8.4.7.1 Landscape Irrigation

Key water savings can be realized from restrictions involving landscape irrigation. Depending on the stage of action identified, the City of El Centro will be enforcing restrictions on irrigation including:

- Lawn and landscape watering restricted to specific days and times
- Runoff from landscape irrigation is prohibited
- Certain types of landscape irrigation are prohibited

8.4.7.2 Commercial, Industrial, and Institutional (CII)

Depending on the stage, CII restrictions include:

- Restaurants may serve water only upon request
- Lodging establishments must offer patrons an opportunity to opt out of linen service

8.4.7.3 Water Features and Swimming Pools

Depending on the water shortage stage, swimming pools are not to be filled.[84]

8.4.7.4 Other

Other prohibitions are enforced depending on the stage of action. Table 8-2 includes prohibitions categorized as “other” along with the appropriate action.

8.4.8 Consumption Reduction Methods

The methods used by the City to reduce consumption at each stage of WSCP enforcement are shown in Table 8-2. Additional information on those methods is provided below.

8.4.8.1 Water Allocations

The City of El Centro measures water in thousands of gallons where one Unit equals 1,000 U.S. gallons. Section 8.4.6.3 establishes health and safety allotments of 50 GPCD. Specific water allocations by Stages are as follows:

[84] Water features are defined in greater detail in Section 8.11 of this WSCP.

Stages 2 and 3 Allocations:

The water allocation program for residential customers is based on average residential customer usage in base year 2013 for each month, less the percentage of conservation being required.

For example:

- During the 2015 drought, the percentage reduction for El Centro customers was 20% percent, so the drought allocation was 80 percent of year 2013 average monthly residential usage.

Stages 4 and 5 Allocations

In the event severe water allocations are required, single-family account allocations may be determined as follows: Assuming four persons or less per home, every account would receive 6 billing Units per month (50 GPCD x 4 persons), plus a percentage of their five year average historic use based on the declared stage.

Percent allocations per declared water shortage stage are as follows: Stage 4: 20%; Stage 5: 10%

For example:

- For an account that used 14 Units per month on average over a 5 year period and the City has declared a Stage 4 shortage:
- 6 billing Units + (14 Units x 20%) = 8.5 Units per month (rounded down to nearest 0.5).
- Appeals would be available for additional people. For each additional person at a home, the allotment is increased by 1.5 Units per billing period (50 GPCD).

For all stages, 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, changes in census data or other factors.

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, nor less than the public health and safety amount as determined in Section 8.4.6.3.

The Finance Director will classify each customer and calculate each customer's allotment according to the guidelines set forth in this section of the WSCP. 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 their application for service is made. During a disaster, it may not be possible to provide prior notice of allotment. In such an instance, notice will be provided by other means. Any customer may appeal the Finance Director's classification on the basis of use or the allotment on the basis of an incorrect calculation.

8.4.9 Catastrophic Supply Interruption

8.4.9.1 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'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 (EOC) 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 (REOC), 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, which would fill the request or ask for federal assistance from the Federal Emergency Management Agency a subsection of the Federal Department of Homeland Security.

8.4.9.2 City Response to Catastrophic Water Supply Reduction

The City's Emergency Response Plan (ERP), initially prepared in 2000 and updated seven times, was updated most recently by Risk Management Professionals, Inc. in July 2016. The 278-page document addresses all types of emergencies including fires, earthquakes, criminal acts, civil disorder, chemical and other hazardous spills as well as water system contamination and chlorine release. The ERP identifies specific responses to be implemented in each type of emergency and identifies individuals in various City departments and divisions who are responsible for implementing those actions. Water Division staff are specifically tasked with the following responsibilities following an emergency event:

- Act to protect life
- Preserve water in storage
- Where water levels are high enough to threaten liquefaction after a seismic even, pump and store water in surface facilities
- Consider which facilities can be saved and which can be sacrificed
- Isolate those areas that will take the longest to restore and arrange for emergency water distribution
- Establish collection points and ration water
- Place plastic bottles at various locations to serve immediate needs
- Provide trucks with water tanks
- Start reserve pumping facilities
- Identify area that can be served with minimal repairs
- Set priorities for repair
- Plan to restore service area-by-area
- Obtain input from the Emergency Operations Center on essential uses including pipeline condition
- Determine whether imported water remains available

Many of the above actions are specific to the immediate aftermath of a water disaster emergency; however, City Water Division personnel who are already trained in these responses will be better able to respond to water supply emergencies due to drought.

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.

In the event of extended regional power outages, the City will use standby diesel generators to power critical functions at the water treatment plant. The fuel will be brought in as needed. In this way the residents of El Centro would not lose their 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. Boil orders would be issued in accordance with directives provided in the City's ERP. Water from the treatment plant 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 initiation of the emergency with these conservation measures in place.

8.4.10 Seismic Risk Assessment and Mitigation Plan

As the result of legislation signed into law by former Governor Brown on October 9, 2015, Section 10632.5[85] of the California Water Code now includes the following language regarding UWMPs:

(a) In addition to the requirements of paragraph (3) of subdivision (a) of Section 10632, beginning January 1, 2020, the plan shall include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.

(b) An urban water supplier shall update the seismic risk assessment and mitigation plan when updating its urban water management plan as required by Section 10621.

(c) An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multihazard mitigation plan addresses seismic risk.

Recognizing that conducting a seismic risk assessment can be a lengthy and complex process, Section 10632.5(c) allows water suppliers to comply with the new Water Code requirement by submitting the relevant local hazard mitigation plan or multihazard mitigation plan, if available.

8.4.10.1 Imperial County Multi-Jurisdictional Hazard Mitigation Plan (MHMP)

El Centro is complying with CWC Section 10632.5 by referencing Imperial County's Multi-Jurisdictional Hazard Mitigation Plan Update (MHMP) dated August 2015. This 425-page Plan was adopted by the El Centro City Council on September 1, 2015 by Resolution No. 15-84 and by the Imperial County Board of Supervisors on December 15, 2015 by Resolution No. 2015-206. Section 5.1 of this report (pages 109-208) addresses Seismic Risks[86]. Imperial County has also issued an August 2020 Final Draft MHMP Update to the earlier 2015 Plan[87]. This more recent document is currently undergoing review by County

[85] Source: Bill Text - SB-664 Water: urban water management planning. (ca.gov)
[86] Source: https://firedept.imperialcounty.org/wp-content/uploads/2019/10/ICMHMP.pdf
[87] Source: http://www.cityofelcentro.org/2020Docs/MHMP-DRAFT.pdf; Final Draft currently undergoing stakeholder review prior to submittal to OES.

stakeholders, with adoption anticipated in the near future. Section 5.2 (pages 122-170) of the 399-page August 2020 Update also address Seismic Risks in both Imperial County and El Centro, noting the probability of an earthquake occurring in the City is "Very High" and the likelihood that such an event will be of "High" severity. Several additional quotes extracted from the August 2020 Update are referenced in the paragraphs below.

As noted on page 125 of the report, "*Over the last 100 years, the area has experienced eleven earthquakes of magnitude 6.0 or greater on the Richter scale with the strongest being a magnitude of 7.2 in 2010. The 7.2 earthquake of April 4, 2010 caused extensive damage to the Imperial County Administration Center and its equipment, when the suspended ceiling system collapsed. Had the building been occupied at the time of the earthquake, there is a high likelihood that injuries and/or deaths would have occurred*."

The report also notes (page 25), "*A moderate to severe incident with intense ground shaking in the populated areas of Imperial County could reasonably be expected to cause numerous casualties, extensive property damage, fire, road closures, disruption of rail systems, communication systems (particularly telephone systems), the County's extensive canal system, and utilities. In addition, health hazards would be posed by damaged sewer systems, waste treatment facilities, and the possible contamination of the County's potable water supply. Medical treatment facilities would most likely be overtaxed. Theft and looting would likely occur as well. The resultant disruption of the agricultural community would affect the local economy.*"

Commenting on a previous significant El Centro earthquake (page 25), the report notes, "*In 1940, an earthquake along the Imperial Fault registered 7.1 on the Richter scale. The epicenter was located east of El Centro. The ground was ruptured for 40 miles from Volcano Lake in Baja California to a point near the City of Imperial. Seven deaths occurred and property loss was in excess of $5 million. Eighty percent of the buildings in Imperial were destroyed; fifty percent of Brawley's structures were damaged. Indirect damage to crops was substantial due to the subsequent disruption of drainage and the occurrence of flooding. Horizontal displacement across the completed but unfilled International Canal was 14 feet, 10 inches and the U.S.- Mexico boundary was permanently changed. The Alamo Canal in Baja California was also offset, and a local flood resulted from water spilling out of the broken channel.*"

The October 15, 1979 Imperial Valley Earthquake measuring 6.6 on the Richter Scale, caused damage to IID's All American Canal, which brings Colorado River water into Imperial County and to El Centro.

With respect to seismic faults, the MHMP notes (page 136) "*There are nine fault zones, primarily northwest-trending, within Imperial County: San Andreas, Imperial, Algodones Sand Dunes, Calipatria, Boundary, Superstition Hills, Superstition Mountain, Laguna Salada, and Elsinore. The most significant fault within the County is the San Andreas, which extends from Mexico into northern California, and the maximum earthquake intensity predicted for this fault is a magnitude 8.3. This fault is located about 28 miles east of the Imperial Fault Zone. Within a few miles to the north of El Centro, there are several faults which have been active historically. Some of these are associated with the recorded 1951 earthquake involving the Superstition Hills fault, a well-documented quake, showing surface faulting.*"

The MHMP (page 140) notes, "*Earthquakes are the principal geologic activity affecting public safety in Imperial County. They are a triggering event which permit the force of gravity to operate and create many secondary hazards from ground shaking, including: (1) differential ground settlement, soil liquefaction, rock and mudslides, ground lurching, and avalanches; (2) ground displacement along the fault; (3) floods from*

dam and levee failure, and seiches; (4) fires; and (5) the various adverse results of disruption of essential facilities and systems - water, sewer, gas, electricity, transportation, and communication (and notably in Imperial Valley, the irrigation and drainage system)."

With respect to Risk Assessment, the MHMP concludes (page 142) "*Imperial County is clearly at high risk for a significant earthquake causing catastrophic damage and strains on response and mitigation resources. Both property and human life are at high risk. The County experiences hundreds of minor quakes and tremblers each month from the myriad of faults in the area. As noted above, it is difficult to predict the severity of casualties and property damage that could result from an earthquake. The severity of casualties and property damage depend on the intensity of the earthquake, location of the epicenter to populated areas, and the time of day of the occurrence.*"

8.4.10.2 April 4, 2010 Earthquake Impacts on El Centro's Water and Wastewater Facilities

The Imperial Valley Press reported the following specific information regarding the impact of the 2010 Easter Sunday earthquake on El Centro's water and wastewater infrastructure:[88]

> *"Aside from the shuttering of the city's public library, the city of El Centro sustained significant damage to its water infrastructure. A 5-million gallon water tank on La Brucherie Road suffered a significant amount of damage.*
>
> *The quake had shut down the old potable water treatment plant located near Eighth Street and Danenberg Road. The emergency prompted the state to grant the city approval to get its new water treatment plant online. What normally may have taken a couple of weeks was able to get approval within 48 hours….*
>
> *The bolts that had anchored a water tower located near Eighth and Vine streets were also torn loose by the April 4, 2010, quake. It was approved for demolition after officials deemed it in danger of falling atop the nearby condominiums.*
>
> *The wastewater plant fared a little better and didn't require a complete shutdown.*
>
> *All told, an estimated $5.1 million was spent on repairs to public facilities…. with part of the funding provided by the Federal Emergency Management Agency."*

8.4.10.3 Seismic Risk Assessment Conclusions

El Centro is located in a seismically active region underlain by multiple earthquake faults. Numerous seismic events have occurred over the past century and it is highly probable such events will continue to occur in future years. Nevertheless, the City of El Centro has promptly replaced water infrastructure damaged during past seismic events and continues to maintain its facilities in good operational conditions.

[88] Source: https://www.ivpressonline.com/news/reminders-of-imperial-valleys-2010-easter-earthquake-linger/article_c7ff262a-e4b5-5e65-b866-acd762d65d02.html#:~:text=Aside%20from%20the%20shuttering%20of,Public%20Works%20Director%20Terry%20Hagen.

8.4.10.4 Recent Seismic Analyses and Retrofits

The City has also been proactive in initiating seismic analyses of critical water infrastructure including a recent assessment of the chlorination system at the Water Treatment Plant.[89] That report was commissioned to evaluate the capacity of the seismic support structures of the chlorination equipment to withstand a major seismic event. The report concluded:

> *"Overall, the chlorine process and storage equipment, and its structural support systems, were observed to have been designed using good engineering principles. The support configurations include lateral force-resisting structures or anchors to resist lateral forces that would be induced by earthquake forces. At this time there are no recommendations for the chlorine storage and distribution system, and it is considered to meet current CalARP (California Accidental Release Program) seismic requirements. The chlorine system is regarded as capable of withstanding the design level peak seismic ground motion forces for the site with a low risk of release of a regulated substance."*

In addition to the seismic analysis of the WTP Chlorination system, the City also seismically retrofitted its La Brucherie Reservoir following the April 2010 Earthquake. Other than these two facilities, the City has no other specific knowledge suggesting any of its water infrastructure requires structural seismic retrofitting.

8.5 Communication Protocols

In the event of a water shortage, the City Manager will direct City personnel to provide public education and notices to all water users within the City's service area, advising them of the water supply conditions and required actions.

The City Manager is also authorized to monitor compliance among users, including a review of customer usage records and field observation or any other steps deemed necessary to enforce mandatory water conservation. Violations are subject to criminal, civil, and administrative penalties, and remedies, which are defined under this plan and in the City of El Centro Water Conservation Regulations and Restrictions. The City may penalize those who continue to willfully waste water by using an escalating series of remedies, up to discontinuing water service or installing flow-restricting devices. Remedies, in order of issuance, are:

- Warning letter
- Notice of Violation
- Administrative Citations with penalties of $100, $200, and up to $500
- Referral to the City Attorney and City Manager for civil or criminal prosecution
- Water service restricted or shut off

Water waste violators will receive a Notice of Violation. A Notice of Violation does not carry a monetary penalty. Notices are followed by a site visit from a City code enforcement officer to verify if the issue has been resolved. If the problem has not been corrected, the code enforcement officer can issue an Administrative Citation. Each violation is treated on a per property basis, and not a per incident basis. For

[89] City of El Centro Water Treatment Plant Seismic Assessment prepared by Olweny & Associates as a subconsultant to Risk Management Professionals, Inc., December 2019.

example, if a property owner has received Notice of Violation for a broken sprinkler head, the next observed violation on the property can result in an Administrative Citation, even if it is for a different fixture. If the problem persists, the case may be referred to the City Attorney and the offender's water service may be restricted or shut off. Terminating a customer's water service is not taken lightly and would occur only when other enforcement measures have not been effective. The City will consider the following factors as part of a decision regarding appropriate remedies:

- Is a drought response level in effect?
- Have prior enforcement remedies been applied?
- Is the violation affecting public health and safety?
- Is the amount of water being used in violation of adopted standards, restrictions, or prohibitions?
- What is the impact of the violation?

8.6 Compliance and Enforcement

Wasting water is illegal at all times, even when no drought response levels are in effect. Additionally, the City's Water Conservation Regulations and Restrictions prohibit all water waste. The regulations define violations of both the permanent water conservation measures and mandatory conservation measures for Drought Response Stages 1 through 5.

As noted in Section 8.5, violations are subject to criminal, civil, and administrative penalties, and remedies, including administrative citations ranging from $100 to $500 as defined under this plan and in the City of El Centro's Water Conservation Regulations and Restrictions. Suspected violators will be notified in accordance with the protocol set forth in Section 8.5 of this WSCP. Additional penalties or charges associated with a violation of the WSCP under a given stage of enforcement are shown in Table 8-2 A.

Table 8-2 A: WSCP Penalties and Charges

Table 8-2 A Retail: WSCP Penalties and Charges	
Penalty or Charges	**Stage When Penalty Takes Effect**
25% Rate Increase	3
50% Rate Increase	4
100% Rate Increase	5
Penalty for Excess Use (1% surcharge for each 1% over allocation)	2
Penalty for Excess Use (2% surcharge for each 1% over allocation)	3
Penalty for Excess Use (3% surcharge for each 1% over allocation)	4
Penalty for Excess Use (4% surcharge for each 1% over allocation)	5

8.7 Legal Authorities

California Water Code Section 10632(a)(7)[90] requires the City to provide:

A. A description of the legal authorities that empower the urban water supplier to implement and enforce its shortage response actions that may include, but is not limited to, statutory authorities, ordinances, resolutions, and contract provisions.

B. A statement that an urban water supplier shall declare a water shortage emergency in accordance with Chapter 3 (commencing with Section 350) of Division 1 of the CWC.

C. A statement that an urban water supplier shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

8.7.1 Legal Authority to Regulate a Municipal Water Utility

Section 28-10 of the El Centro Municipal Code[91] provides the City Council with the legal authority and administrative power to regulate its municipal water utility service through the following codification:

> *"The city council reserves the right and power to, and may from time to time by resolution adopt rules and regulations for the operation and maintenance of the water department of the city, and for furnishing water to users; and by resolution may establish and modify from time to time the rates, charges, deposits, and collections including penalties and procedures all relating to the installation, maintenance and termination of water service; and may from time to time by resolution prescribe rules for the extension of water mains within the boundaries and outside the boundaries of the city."*

8.7.2 Legal Authority to Implement Water Shortage Response Actions

Chapter 28, Article III of the City's Municipal Code, Water Conservation Regulations and Restrictions, Sections 28-50 through 28-59 provide the City Council with the authority to establish water conservation regulations and restrictions during times of drought or other water emergencies. Specifically, Section 28-51 states:

> *"The water department shall monitor and evaluate the projected supply and demand for water by its customers and any state proclamations regarding drought conditions. In the event of a water shortage and/or statewide drought, the water department shall recommend that the council make a determination, by resolution, that a water shortage exists and that the appropriate water conservation plan shall take effect, as provided in this article. The city council may discontinue any stage or may implement another stage as necessary. Upon a finding by the city council that a water shortage no longer exists, any water shortage stage then in effect shall terminate."*

[90] Source: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=10632
[91] For a full reading of the City's Water Code including its water conservation provisions, please refer to: https://library.municode.com/ca/el_centro/codes/code_of_ordinances?nodeId=CHCOTA_CH28WA

Additionally, the City's legal authority to enforce water shortage response actions comes from Section 1009 of the Water Code. More specifically, Water Code Sections 370-374[92] deal with allocation based pricing and Water Code Sections 375-378[93] deal with water conservation. Any supplier of water in this state for municipal use, including the state, or any city, county, city and county, district, individual, partnership, corporation, or any other entity, may undertake a water conservation program to reduce water use and may require, as a condition of new service, that reasonable water-saving devices and water reclamation devices be installed to reduce water use.

8.7.3 Legal Authority to Declare a Water Shortage Emergency

Section 28-51 of the Municipal Code (referenced above) also allows the City Council to determine in conjunction with State drought proclamations, that a water shortage exists and implement an appropriate stage of its water conservation plan, thus complying with the Water Shortage Emergency provisions of California Water Code, Chapter 3 (commencing with Section 350) of Division 1.[94]

8.7.4 Coordination with Imperial County and IID

The City of El Centro is the County Seat of Imperial County and has closely coordinated with the County in the adoption of previous water conservation resolutions and ordinances. City staff also provided appropriate advance notification of the preparation of this 2020 UWMP and of the June 15, 2021 Public Hearing at which the UWMP and the WSCP were adopted. County officials were invited to review and provide comments on the draft 2020 UWMP and WSCP posted on the City's website and to participate in the Public Hearing. These invitations were extended on April 12, 2021 to the following specific County Officials:

- Jim Minnick, Planning and Development Services Director, Imperial County
- Michael Abraham, Assistant Development Services Director, Imperial County

The City of El Centro also coordinates closely with the Imperial Irrigation District and provided similar notice regarding the preparation of this document on April 12, 2021 to the following IID staff members:

- Henry Martinez, General Manager, IID
- Sergio Quiroz, Assistant General Manager, IID

The City of El Centro will continue to coordinate with these agencies and individuals with respect to the possible future proclamation of a local emergency under California Government Code, California Emergency Services Act, Article 2, Section 8558(c).[95]

[92] Source: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=WAT&division=1.&title=&part=&chapter=3.4.&article=
[93] Source: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=WAT&division=1.&title=&part=&chapter=3.5.&article=
[94] Source: Law section (ca.gov)
[95] Source: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV&sectionNum=8558

8.8 Financial Consequences of WSCP Activation

8.8.1.1 Drought Rate Structure and Surcharges

Drought Rate increases will be necessary during a prolonged water shortage. As described in this WSCP, a Stage 2 shortage will be accompanied by a 20% reduction in water deliveries while Stages 3, 4 and 5 shortages will be accompanied by 30%, 40% and 50% (or greater) reductions, respectively. When a Water Shortage Emergency is declared, the supply shortage will trigger the appropriate Rationing Stage and rate increase. All surplus revenues the City collects are currently used to fund the Rate Stabilization Fund, conservation, and other capital improvements. The City has estimated projected ranges of water sales by shortage stage to better understand the impact each level of shortage will have on projected revenues and expenditures by each shortage stage. Based on that analysis, the water conservation penalties and charges set forth in Table 8-2 A were established.

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, which result from this rate adjustment will be redirected to the Rate Stabilization Fund.

8.8.1.2 Use of Financial Reserves

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 annual water department revenue. This fund will be used to stabilize rates during periods of water shortages 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 with this fund in place.

8.8.1.3 Other Measures

One measure used to help overcome revenue and expenditure impacts is implementing a decrease in capital expenditures. This will result in an increase in savings to the General Fund, but it could also cause a delay of system rehabilitation and a decrease the quality of future system facilities.

Another proposed measure to overcome revenue and expenditure impacts is decreasing O&M expenditures. This will provide increased savings to the General Fund but may also result in less staff available to respond to emergencies and reduced maintenance frequency of system facilities.

8.9 Monitoring and Reporting

8.9.1 Reporting Protocol

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 Public Works Director and incorporated into the water supply report.

During a Stage 1 Water Conservation Declaration, daily production figures are reported on a monthly basis to the Supervisor and compared against targets. During Stage 2 water shortage, daily production figures are reported to the Supervisor. The Supervisor compares the monthly production to the target monthly production to verify the reduction goal is being met. Monthly reports are forwarded to the Finance Director

to implement appropriate actions and the Water Shortage Response Team (Department heads and City Manager). Reports are sent to the City Council as needed; however, for catastrophic water failures, reporting frequency will be increased as needed for adequate response. If reduction goals are not met, the Manager will notify the City Council so corrective action can be taken.

During a Stage 3 water shortage, daily production figures are reported to the Supervisor. The Supervisor compares the weekly production to the target weekly production to verify the reduction goal is being met. Weekly reports are forwarded to the Finance Director and the Water Shortage Response Team. Monthly reports are sent to the City Council; however, for catastrophic water failures, reporting frequency will be increased as needed for adequate response. If reduction goals are not met, the Manager will notify the City Council so corrective action can be taken. During a Stage 4 or Stage 5 water shortage, the procedure listed above will be followed, with the addition of a daily production report to the City 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.

8.9.2 Determining Water Shortage Reductions

The City uses meters to monitor the effectiveness of each stage of action or drought response level. The City meters both water supplies entering the distribution system, and water consumed by individual customers. The City can compare this meter data with usage in prior months and during non-drought years to determine if it is achieving specific percentage reduction goals for water consumption associated with the drought response levels. If the goals are not being met, the City can implement additional consumption reduction methods. The City is also required to report total monthly production to the SWRCB in compliance with California Executive Orders B-29-15 and B-36-15.

The City is also in the process of completing the replacement of all existing water meters with smart meters which will allow real-time tracking of individual water service consumption and allow customers to better track their own usage and savings (this project is currently about 95% complete).

8.10 WSCP Refinement Procedures

The WSCP is a dynamic document prepared and implemented as an adaptive management plan. Based on the monitoring and reporting program presented in Section 8.9, the City will evaluate the need to revise its WSCP. The WSCP will be refined as needed to ensure the shortage response actions are effective and produce the desired results. If potential refinements or new actions are identified, the City will evaluate their effectiveness and incorporate them into the WSCP, if deemed appropriate. The action will be identified and implemented at the appropriate water shortage level. Refinements to the WSCP will be presented by the Water Division Manager and to the City Council for approval and adoption, including any necessary additions or revisions to the Municipal Code.

8.11 Special Water Feature Distinction

8.11.1 Water Code Definition of Water Features

Section 10632(10)(b) of the CWC[96] defines water features as follows:

> *"For purposes of developing the water shortage contingency plan pursuant to subdivision (a), an urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code."*

8.11.2 Health and Safety Code Water Feature Provisions

Section 1159219(a) of the California Health and Safety Code[97] includes the following defining language:

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

Depending on the City of El Centro Water Conservation Stage, decorative ponds, fountains, and other waterscape features are not to be filled or replenished. Fountain pumps should remain off to minimize evaporation.

8.12 Plan Adoption, Submittal and Availability

The City adopted its 2020 UWMP by Resolution No. 21-XX on June 15, 2021. A copy of the adopted resolution is included in Appendix E. The City's 2020 WSCP, incorporated within Chapter 8 of this UWMP, was also adopted by Resolution No. 21-XX, which declares the following:

1. The 2020 Urban Water Management Plan is hereby adopted and ordered filed with the City Clerk.
2. The WSCP incorporated within the 2020 UWMP is hereby adopted and ordered filed with the City Clerk.
3. The City Manager is hereby authorized and directed to file the 2020 Urban Water Management Plan with the California Department of Water Resources within thirty days after this date.
4. The City Manager is hereby authorized to implement the Water Conservation Programs as set forth in the 2020 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 as set forth in City Ordinance 17-01 adopted on February 21, 2017[98] and in Chapter 28, Article III of the City Code, Sections 28-50 through 28-59.

[96] Source: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=10632
[97] Source: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=115921.&lawCode=HSC
[98] Source: https://library.municode.com/ca/el_centro/ordinances/code_of_ordinances?nodeId=817551

5. During a water shortage, the City Council is hereby authorized to declare a Water Shortage Emergency and implement the necessary elements of the Water Shortage Stages and Triggers indicated in this Plan, as described in the Plan and in City Ordinance 17-01 and Chapter 28, Article III of the City Code, Sections 28-50 through 28-59.
6. That the City Manager shall recommend to the City Council additional regulations to carry out effective and equitable allocation of water resources.

The adoption process included external coordination and outreach activities carried out by the City as provided in Chapter 10 of the UWMP. The WSCP may be amended independently of the UWMP, as needed. If the WSCP is revised, a copy of the plan will be submitted to DWR within 30 days of adoption.

As noted above, Ordinance 17-01 established water conservation Stages in accordance with those set forth in Table 8-1 of this UWMP. Language from that Ordinance as well as the following generic water conservation language can be used as a template, if needed to address future drought conditions:

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

(a) The City is the water purveyor for the property owners and inhabitants of El Centro.

(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 2020 Water Shortage Contingency 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 the State emergency drought regulations expire 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 El Centro hereby directs the City Manager 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 City Manager 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.

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9 DEMAND MANAGEMENT MEASURES

The goal of the Demand Management Measures (DMM) section is to provide a comprehensive description of the water conservation programs that a supplier has implemented, is currently implementing, or plans to implement to meet its urban water use reduction targets. The reporting requirements for DMM was significantly modified and streamlined in 2014 by Assembly Bill 2067. For a retail agency such as the City, the requirements changed from having 14 specific measures to six more general requirements plus an "other" category, as set forth in CWC Sections 10631(e)(1)(A) and (B) which reads:[99]

CWC 10631(e)(1)

(A) The narrative shall describe the water demand management measure that the supplier plans to implement to achieve its water use targets pursuant to 0608.20.

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

i. Water waste prevention ordinances.

ii. Metering.

iii. Conservation pricing.

iv. Public education and outreach.

v. Programs to assess and manage distribution system real loss.

vi. Water conservation program coordination and staffing support.

vii. Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

9.1 Water Waste Prevention Ordinances

In response to the 2014-2015 drought, the El Centro City Council adopted Resolution 14-78 on July 29, 2014 approving Water Conservation Measures in compliance with SWRCB 2014-38. This Resolution established prohibitions on a series of wasteful water uses and established fines varying from warnings to $500/day for first through fifth violation offenses.

On June 16, 2015, the City Council passed Resolution No. 15-55 repealing Resolution No. 14-78, which no longer met new regulations specified in SWRCB Water Conservation Resolution No. 2015-0032. The new Resolution declared a Water Shortage existed and implemented a Level 2 Water Conservation Plan.

On the same day Resolution 14-78 was repealed and replaced with Resolution 15-55, the City Council also adopted Ordinance No. 15-07 establishing Water Conservation Regulations and Restrictions and Levels of Water Conservation Plans, which became effective immediately. Ordinance No. 15-07 amended Chapter 28 of the El Centro Municipal Code by adding Article III entitled "Water Conservation Regulations and Restrictions." Newly adopted Section 28-50 of the City Code stated:

[99] Source: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=10631

"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, wasteful use of water should be eliminated. It shall be unlawful for any person, firm, partnership, association, corporation, political entity (including the city) or any other water department customer to use water in a manner inconsistent with this regulation."

On February 21, 2017, the City Council adopted Ordinance No. 17-01 repealing in its entirety, SECTION 1, Chapter 28, Article III, Sections 28-50 through 28-55 of the El Centro City Code and readopted revised and updated language relating to Water Conservation and Water Shortage Contingency Rules and Regulations. Ordinance No. 17-01 also established provisions for prohibitions against water waste and water supply shortage contingency implementation plans. The new Ordinance established five Stages of Water Reduction Plans, ranging from voluntary measures in Stage 1 to a series of increasingly stricter mandatory prohibition measures in Stages 2 through 5. The provisions and water conservation measures to be implemented in response to each shortage phase are described in Section 8 of this UWMP. A copy of Ordinance No. 17-01 is included in Appendix C.

9.2 Metering

The City of El Centro is fully metered as required by Chapter 28 (Water), Article I, Section 28-1 of the Municipal Code.[100] Generally, meters older than 10 years are inspected and replaced if necessary. The City reads the meters and bills customers monthly 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.

In 2016, the City began replacing old existing water meters at their current in-service location with an AMR/AMI (Automatic Meter Reading/Advanced Metering Infrastructure) system. This replacement program, which is currently about 95 percent complete, will provide the following benefits:

- Improved customer service
- Improved data collection and billing accuracy
- Reduced customer complaints
- Improved billing with real-time data
- Early identification of customer water leaks
- Reduction in theft of service
- A customer information system website
- Remote shut-off and turn-on of service for late-payment
- Cost savings in meter reading
- Improved staff monitoring of citywide water consumption

[100] Source: https://library.municode.com/ca/el_centro/codes/code_of_ordinances?nodeId=CHCOTA_CH28WA

9.3 Conservation Pricing

The City encourages its residents and businesses to implement voluntary water conservation practices as described in Section 28-50 of the Municipal Code. Examples of good water conservation practices regarding irrigation watering hours, water runoff, car washing, cleaning driveways and sidewalks, and use of water features are also posted on the City's website.[101]

The City does not have a tiered rate structure (sometimes also referred to as a water conservation rate structure) whereby customers are charged higher unit rates for increasing levels (or tiers) of usage. However, by encouraging customers to employ good water conservation practices, the City is in essence offering a form of conservation pricing because using less water translates directly into lower monthly water bills.

As noted in Chapter 8, during a Stage 3, 4 or 5 Water Shortage, the City will implement 25%, 50% and 100% penalties on top of basic water charges. Additionally, the City will levy a surcharge 1%, 2%, 3% or 4% for each 1% over a customer's allotted water allocation during Stages 2, 3, 4 and 5, respectively. Taken as a whole, these charges represent Water Conservation Pricing during a drought emergency.

9.4 Public Education and Outreach

9.4.1 City Programs

The City has traditionally participated in various education and outreach programs to inform the public of water conservation goals and methods. Traditionally, the City promotes water conservation through its participation in the following activities:

- Offering rebates on water conserving plumbing fixtures
- Communicating water usage information via water bills (e.g., comparing a customer's water with that of other similar customers)
- Issuing water conservation related press releases
- Publishing newspaper articles relating to the benefits of water conservation
- Incorporating water conservation news into City Newsletters
- Posting informative water conservation information on the City's website (refer to the "Save Our Water" link cited in the previous footnote
- Using social media and other online tools to promote water conservation
- Providing school education programs
- Staffing information booths at fairs and public events

Unfortunately, due to COVID-19 restrictions, the City has not been able to participate in all the above-listed activities over the past year, particularly the latter two. As COVID-19 restrictions are slowly lifted in the

[101] Source: http://www.cityofelcentro.org/pworks/index.asp?m=1&page=66&subpage=24

coming months, it is the City's hope and desire to once again, promote water conservation through its participation in the following specific activities:

- Imperial County Mid-Winter Fair – Past involvement included hosting a booth for the duration of this weeklong fair. Previously, the City staffed an education booth from opening day to closing day, during which time they distributed thousands of educational packets to children ranging in age from two years to 17 years of age.
- Annual Children's Fair – The City has hosted an informational booth to better educate school aged children and their parents on the importance of water saving measures and conservation. Past events have been very well attended with hundreds of educational packets being distributed each year.
- City Hosted Events/Activities – The Public Works Department has participated in various other events and activities over the years to help educate the citizens of El Centro on the importance of water conservation.

9.4.2 Regional Programs

IID is the Regional Water Purveyor for Imperial County. In recognition of the importance of water conservation to the region, IID Board of Directors established a Water Conservation Advisory Board (WCAB)[102] in July 1979. The WCAB was created to provide information and input related to water use efficiencies, for both system and on-farm water management practices, to the IID Board of Directors and the public. The WCAB consists of a total of 15 water users, three from each division, who are appointed by the five IID Directors.

IID additionally maintains a detailed Water Conservation page on its website where the following information is noted:

> *"With a 3.1 million acre-feet annual entitlement to Colorado River water, IID is a careful steward of every drop of this precious resource. Though conservation measures date back many years, since the 2003 implementation of the Quantification Settlement Agreement, IID has aggressively been conserving water to meet the ramping-up conservation schedules – expecting to generate more than 314,000 acre-feet in 2016 for the QSA. This is in addition to the 105,000 acre-feet generated annually by the conservation program funded by the Metropolitan Water District of Southern California and the 67,700 acre-feet conserved by the All-American Canal Lining Project.*
>
> *Collectively, with all its conservation efforts, IID will ultimately conserve about 15 percent of its consumptive use entitlement each year – over 487,000 acre-feet when all conservation measures are at full implementation."*

The Water Conservation page cites the following specific activities, which comprise important elements of IID's overall water conservation program:

- Water Apportionment – Since 2013, IID has been implementing a system of apportionment through its Equitable Distribution Plan to help agricultural water users more accurately plan and manage their annual water use and thereby reduce their water usage. Agricultural water users are

[102] Information on the WCAB is available on IID's website: https://www.iid.com/government/water-conservation-advisory-board

encouraged to closely plan their yearly cropping plans and irrigation schedules to maximize their apportionments. The district provides support to growers who seek assistance in creating crop water budgets and measurement tools to monitor their field water use throughout the year.

- Fallowing Program – Fallowing is the practice of temporarily taking active farmland out of production. Water, which under normal circumstances would have gone to the land to produce crops, is considered conserved under the fallowing program. Conserved water from fallowing is transferred to the San Diego County Water Authority and was used for delivery to the Salton Sea (through 2017) to mitigate the environmental impacts of these transfers, and for payback or storage purposes. The water transfer schedules call for the district to generate 150,000 acre-feet per year through fallowing from 2013 through 2017 for these mitigation and transfer needs, after which IID's required fallowing will be completed. In 2014, the fallowing program was re-engineered to better integrate it with the farm unit approach developed for the district's Equitable Distribution Plan.
- System Conservation – IID also generates conserved water to meet the needs of the QSA water transfers by making water efficiency improvements in its delivery system. Conservation targets started at 4,000 acre-feet in 2008 with the goal of capturing and reusing operational discharge. With the completion of the first system conservation project (the Main Canal Seepage Interception project and other system projects), the district conserved nearly 45,000 acre-feet in 2015 through system conservation. IID system conservation measures generated nearly 50,000 acre-feet in 2016, with the goal of reaching 103,000 acre-feet annually by 2026. System conservation efforts improve the reliability and flexibility of water deliveries and facilitate future on-farm conservation efforts. Of the 303,000 acre-feet of conserved water IID needs to generate for the QSA water transfers at full implementation, 200,000 acre-feet is to come from on-farm conservation measures by 2026. In 2015, IID generated 85,628 acre-feet through on-farm water conservation measures.
- The All-American Canal Lining Project – IID provides 67,700 acre-feet of conserved water annually to Southern California through the All-American Canal Lining Project.
- IID-MWD Water Conservation Agreement – IID conserves 105,000 acre-feet annually for the Metropolitan Water District of Southern California through the historic water transfer agreement entered into by the parties in 1988. Not to be confused with IID's more recent System Conservation Plan, for nearly three decades MWD has been funding capital and annual operating and maintenance costs for specific water conservation projects in the IID water delivery system in exchange for the conserved water generated by the projects.

And lastly, IID also provides water conservation tips on its California Drought Information page to the seven cities it serves (including El Centro) in Imperial County.[103]

9.5 Programs to Assess and Manage Distribution System Real Loss

The City provides routine and planned system maintenance to prevent system water losses. As previously noted, the City is approximately 95 percent complete with its AMR/AMI installation program, which will allow better management of the production, storage, and distribution of water. Once completed, this replacement

[103] Source: https://www.iid.com/water/ca-drought-information

program will also assist the City in substantially decreasing non-revenue water by detecting water loss both in the distribution network and at customer end-points.

9.6 Water Conservation Program Coordination and Staffing Support

The City's water conservation efforts are being coordinated through the stormwater program, which is being administered by the Environmental Compliance Division of the Public Works Department. The person heading the City's water conservation efforts is Frank Pacheco, Environmental Specialist.

9.7 Other Demand Management Measures Implemented Over the Past Five Years

In addition to the previously referenced AMR/AMI meter replacement program, the City has also repaired pipelines and other water system appurtenances over the past five years, as required to limit system leakage and to allow for the collection of more accurate water usage data.

10 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

Recognizing that close coordination among other relevant public agencies is key to the success of its UWMP, the City worked closely with IID, its wholesaler, in the development and updating of this planning document. The City also encouraged public involvement by holding a public hearing for residents to learn and ask questions about their water supply.

This section provides the information required in Article 3 of the Water Code related to adoption and implementation of the UWMP. Table 2-4 A included in Chapter 2 of this UWMP, summarized external coordination and outreach activities carried out by the City and the corresponding levels of participation by those parties. A copy of the UWMP checklist, which was used to confirm compliance with the Water Code, is provided in Appendix A.

10.1 Inclusion of All 2020 Data

All water usage and planning data referenced in this report for the current year is for the calendar year beginning on January 1, 2020 and ending on December 31, 2020.

10.2 Notice of Public Hearing

Table 10-1 provides information on the notification process used by the City to inform its own internal staff as well as the Imperial Irrigation District and Imperial County of the preparation of this UWMP and the date of the public hearing. Please note the City of El Centro does not serve water to any other cities outside its jurisdictional boundaries.

Notification of the public hearing was also provided to the public via two separate notices published in the Imperial Valley Press on May 25, 2021 and June 1, 2021. A copy of the proof of publication is included in Appendix D. A copy of the Final Draft of El Centro's 2020 UWMP was also posted on the City's website on May ___, 2021.

Table 10-1 Retail: Notification to Cities and Counties

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
El Centro	Yes	Yes
Imperial Irrigation District	Yes	Yes
County Name	60 Day Notice	Notice of Public Hearing
Imperial County	Yes	Yes

10.3 Public Hearing and Adoption

A public hearing was held in the City of El Centro Council Chambers on June 15, 2021 at 7:00 p.m. At the conclusion of that public hearing, the City Council adopted this UWMP along with the WSCP by Resolution No. 21-XX. A copy of the Resolution is included in Appendix E.

10.4 Plan Submittal

Following its adoption, the 2020 UWMP, including its accompanying WSCP, will be submitted electronically to DWR through the WUE Data Portal prior to July 1, 2021. A copy of all required DWR Tables included in this UWMP (all tables not having a letter designation) is also included in Appendix B.

A CD containing a digital copy of the 2020 UWMP and WSCP will also be submitted to the California State Library, Imperial County, and the Imperial Irrigation District within 30 days of the date of adoption.

10.5 Public Availability

The 2020 UWMP and WSCP will be posted on the City's website and made available to the public within 30 days of the date of adoption.

10.6 Amending an Adopted UWMP or WSCP

Should the City amend this adopted UWMP and/or WSCP, it will follow each of the steps for notification, public hearing, adoption, and submittal referenced in this Chapter.

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California Legislative Information, Government Code, Chapter 7, California Emergency Services Act, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV&sectionNum=8558

California Legislative Information, Health and Safety Code, Division 104, Part 10, Chapter 5, Article 2.5, The Swimming Pool Safety Act, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=10632

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CITY OF EL CENTRO
2020 UWMP
APPENDICES

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APPENDIX A

UWMP Checklist

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Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	
x	x	Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	
x	x	Section 2.2	10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	
x	x	Section 2.6	10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	
x	x	Section 2.6.2	10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan Preparation	
x		Section 2.6, Section 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	
	x	Section 2.6	10631(h)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	
x	x	Section 3.1	10631(a)	Describe the water supplier service area.	System Description	
x	x	Section 3.3	10631(a)	Describe the climate of the service area of the supplier.	System Description	
x	x	Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	
x	x	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	
x	x	Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	
x	x	Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	
x	x	Section 4.2	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	
x	x	Section 4.2.4	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	
x	x	Section 4.2.6	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans and other policies or laws.	System Water Use	
x	x	Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	
x	optional	Section 4.3.2.4	10631(d)(3)(A)	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	
x	optional	Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	
x	x	Section 4.5	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	
x		Chapter 5	10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	
x		Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	
	x	Section 5.1	10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	
x		Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	
x		Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	
x		Section 5.5 and Appendix E	10608.4	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	
x	x	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	
x	x	Sections 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, *including changes in supply due to climate change.*	System Supplies	
x	x	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	
x	x	Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	
x	x	Section 6.2.8	10631(b)	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045.	System Supplies	
x	x	Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	
x	x	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	
x	x	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System Supplies	
x	x	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	
x	x	Section 6.2.2.1	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	
x	x	Section 6.2.2.4	10631(b)(4)(C)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	
x	x	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	
x	x	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long- term basis.	System Supplies	
x	x	Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	
x	x	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	
x	x	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	
x	x	Section 6.2.5	10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	
x	x	Section 6.2.5	10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	
x	x	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	
x	x	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System Supplies	
x	x	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	
x	x	Section 6.2.8, Section 6.3.7	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	
x	x	Section 6.4 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	
x	x	Section 7.2	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	
x	x	Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	
x	x	Section 7.3	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	
x	x	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	

x	x	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	
x	x	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	
x	x	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	
x	x	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	
x	x	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	
x	x	Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	
x	x	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	
x	x	Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	
x	x	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	
x	x	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	
x	x	Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	
x	x	Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	
x	x	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	
x	x	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	
x	x	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	
x	x	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	
x	x	Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	
x	x	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	
x	x	Section 8.5 and 8.6	10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	
x		Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	
x		Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	
x	x	Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	
x	x	Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	
x	x	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	
x	x	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	
x		Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	
x		Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	
x		Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	
x	x	Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	
x	x	Section 8.12	10632(c)	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	
	x	Sections 9.1 and 9.3	10631(e)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	
x		Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	
x		Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	
x	x	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	
x	x	Section 10.4	10621(f)	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	
x	x	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	
x	x	Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	
x	x	Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	
x	x	Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	
x	x	Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	
x	x	Sections 10.4.1 and 10.4.2	10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	
x	x	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	
x	x	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	
x	x	Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	
x	x	Section 10.7.2	10644(b)	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	

APPENDIX B

UWMP Submittal Tables

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Submittal Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
Add additional rows as needed			
CA1310004	City of El Centro	10,458	7,580
	TOTAL	10,458	7,580
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*			
NOTES: (1) Municipal connections include active, inactive, and temporary service connections; (2) Volumeof water supplied includes water entering the potable water system (for El Centro, that includes only treated imported water; and (3) Water volume is in			

Submittal Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance** *if applicable* (select from drop down list)
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☐	Water Supplier is also a member of a Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES:			

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesaler
☑	Supplier is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP * (select from drop down)	
Unit	AF
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*	
NOTES:	

Submittal Table 3-1 Retail: Population - Current and Projected						
Population Served	2020	2025	2030	2035	2040	2045*(opt)*
	45,657	48,208	50,759	53,018	55,886	58,753
NOTES: 2020 Population estimate was obtained from DOF website. Population projections for 2030, 2035 and 2045 were based on SCAG SoCal Connect Regional Transportation Plan growth projections provided to the City of El Centro. Projections for 2025 and 2040 were calculated by linear interpolation between the 2020 and 2030 populations and the 2035 and						

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable [1] Water - Actual			
Use Type	2020 Actual		
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume[2]
Add additional rows as needed			
Single Family		Drinking Water	4,039
Multi-Family		Drinking Water	1,048
Commercial		Drinking Water	813
Institutional/Governmental		Drinking Water	435
Industrial		Drinking Water	1
Landscape		Drinking Water	771
Other Potable		Drinking Water	0
Losses		Drinking Water	473
Other Non-Potable		Other Non-Potable Water	0
		TOTAL	7,580

[1] *Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.*
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. [2]

NOTES: Demands are based on the City's billing records for the period from January 1, 2020 through December 31, 2020

Submittal Table 4-2 Retail: Use for Potable and Non-Potable[1] Water - Projected						
Use Type	Additional Description (as needed)	Projected Water Use[2] *Report To the Extent that Records are Available*				
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		2025	2030	2035	2040	2045 (opt)
Add additional rows as needed						
Single Family	Potable	4,275	4,362	4,426	4,642	4,858
Multi-Family	Potable	937	956	970	1,017	1,065
Commercial	Potable	986	1,039	1,084	1,143	1,202
Institutional/Governmental	Potable	475	500	522	551	579
Industrial	Potable	1	1	1	1	1
Landscape	Potable	725	764	798	841	884
Other	Potable	0	0	0	0	0
Losses	Potable	506	521	533	560	587
Other Non-Potable	Non-Potable	0	0	0	0	0
	TOTAL	7,905	8,143	8,334	8,755	9,176

[1] *Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.* [2] *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Demand projections are based on the population increases referenced in Table 3-1B, with applied residential conservation as described in Section 4.3.1 (Demand Projection Methodology).

Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)						
	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable *From Tables 4-1R and 4-2 R*	7,580	7,905	8,143	8,334	8,755	9,176
Recycled Water Demand[1] *From Table 6-4*	0	0	0	0	0	0
Optional Deduction of Recycled Water Put Into Long-Term Storage[2]						
TOTAL WATER USE	7,580	7,905	8,143	8,334	8,755	9,176

[1] Recycled water demand fields will be blank until Table 6-4 is complete

*[2] Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier **may** deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.*

NOTES:

Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss [1,2]
01/2015	565
01/2016	604
01/2017	281
01/2018	569
01/2019	449
[1] *Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* [2] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*	
NOTES: The audits filed in 2018 and 2019 contain unreasonably high water loss estimates (34.1% and 26.4% in 2018 and 2019,	

Submittal Table 5-1 Baselines and Targets Summary
From SB X7-7 Verification Form
Retail Supplier or Regional Alliance Only

Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	*2001*	*2010*	*201*	*198*
5 Year	*2003*	*2007*	*209*	

**All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)*

NOTES: Target equal to minimum allowed equal to 95% of five-year basline.

Submittal Table 5-2: 2020 Compliance
From SB X7-7 2020 Compliance Form
Retail Supplier or Regional Alliance Only

2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* *(Adjusted if applicable)*		
148	*0*	*0*	*198*	*Yes*

**All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*

NOTES:

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2020 service area covered by wastewater collection system *(optional)*					
	Percentage of 2020 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected from UWMP Service Area 2020 *	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
City of El Centro	Metered	3,529	3529	El Centro	Yes	No
Total Wastewater Collected from Service Area in 2020:		3,529				
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3* **.**						
NOTES:						

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020

☐ **No wastewater is treated or disposed of within the UWMP service area.** The supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)* [2]	Method of Disposal ***Drop down list***	Does This Plant Treat Wastewater Generated Outside the Service Area? ***Drop down list***	Treatment Level ***Drop down list***	2020 volumes [1]				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
El Centro	Central Main	Drain Flows 8 Miles to Alamo River and th		River or creek	No	Secondary,	3,529	3,529	0	0	No
						Total	3,529	3,529	0	0	0

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.
[2] If the **Wastewater Discharge ID Number** is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility

NOTES:

Submittal Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
Drop down list May use each category multiple times.These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Groundwater (not desalinated)	NA	0		
Purchased or Imported Water	Imperial Irrigation District – Raw Colorado River Water	7,580	Other Non-Potable Water	
Recycled Water	NA	0		
	Total	7,580		0
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*				
NOTES:				

Submittal Table 6-9 Retail: Water Supplies — Projected											
Water Supply	Additional Detail on Water Supply	Projected Water Supply * Report To the Extent Practicable									
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		**2025**		**2030**		**2035**		**2040**		**2045** (opt)	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Add additional rows as needed											
Purchased or Imported Water	Imperial Irrigation District - Raw Colorado River Water	7,905		8,143		8,334		8,755		9,176	
Groundwater (not desalinated)		0		0		0		0		0	
Recycled Water		0		0		0		0		0	
	Total	7,905	0	8,143	0	8,334	0	8,755	0	9,176	0
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*											
NOTES											

Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type	**Base Year** If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	**Available Supplies if Year Type Repeats**	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available *	**% of Average Supply**
Average Year	2008	9034	100%
Single-Dry Year	2006	9677	107%
Consecutive Dry Years 1st Year	1998	8481	94%
Consecutive Dry Years 2nd Year	1999	8592	95%
Consecutive Dry Years 3rd Year	2000	8792	97%
Consecutive Dry Years 4th Year	2001	8760	97%
Consecutive Dry Years 5th Year	2002	8837	98%

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

***Units of measure (AF, CCF, MG**) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Base year supply to the City is provided here for reference in calculating the projected percentage of average supply available during single-dry and five consecutive dry year periods. The volumes do not necessarily represent the supply available in future years

Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 *(Opt)*
Supply totals (*autofill from Table 6-9)*	7,905	8,143	8,334	8,755	9,176
Demand totals *(autofill from Table 4-3)*	7,905	8,143	8,334	8,755	9,176
Difference	0	0	0	0	0
NOTES:					

Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals*	8,458	8,713	8,917	9,368	9,818
Demand totals*	8,458	8,713	8,917	9,368	9,818
Difference	0	0	0	0	0
Units of measure (AF, CCF, MG) *must remain consistent throughout the UWMP as reported in Table 2-3.*					
NOTES:					

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	7,431	7,654	7,834	8,230	8,625
	Demand totals	7,431	7,654	7,834	8,230	8,625
	Difference	0	0	0	0	0
Second year	Supply totals	7,510	7,736	7,917	8,317	8,717
	Demand totals	7,510	7,736	7,917	8,317	8,717
	Difference	0	0	0	0	0
Third year	Supply totals	7,668	7,899	8,084	8,492	8,901
	Demand totals	7,668	7,899	8,084	8,492	8,901
	Difference	0	0	0	0	0
Fourth year	Supply totals	7,668	7,899	8,084	8,492	8,901
	Demand totals	7,668	7,899	8,084	8,492	8,901
	Difference	0	0	0	0	0
Fifth year	Supply totals	7,747	7,980	8,167	8,580	8,992
	Demand totals	7,747	7,980	8,167	8,580	8,992
	Difference	0	0	0	0	0
Sixth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES:						

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

2021	Total
Total Water Use	7,186
Total Supplies	7,186
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use	7,325
Total Supplies	7,325
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2023	Total
Total Water Use	7,542
Total Supplies	7,542
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2024	Total
Total Water Use	7,605
Total Supplies	7,605
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2025	Total
Total Water Use	7,835
Total Supplies	7,835
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

Submittal Table 8-1
Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range	Shortage Response Actions (*Narrative description*)
1	≤ 10%	Projected supply is adequate or projected supply is insufficient to provide 90% of normal demand or contamination of 5% of water supply. Actions: 1. Landscape runoff prohibited; 2. CII lodging must offer to opt out of linen service; 3. Restaurants may only serve water upon request; 4.Water features must recirculate; 5. Customers must repair leaks in a timely manner; 6. Automatic shutoff of hoses; 7.Prohibit use of potable water for washing hard surfaces; 8. Expand public information campaign; 9. Voluntary plumbing fixture replacement
2	20%	Projected supply insufficient to provide 80% of normal demand or contamination of 10% of water supply. Actions (All Shortage Level 1 Restrictions plus these added actions): 1. Limit landscaping irrigation to specific times (< 10 a.m. or after 6 p.m.); 2. Limit landscape irrigation to specific days (3 day June 1-Sept 15; 2 days other times; 3. Watering of permanent trees allowed as necessary to keep them alive; 4. Prohibit use of potable water for construction and dust control; 5. Implement water allocations based on 2013 usage minus conservation; 6.Improve customer billing; 7. Provide rebates on plumbing fixtures, landscape irrigation and turf replacement as funding allows; 8. Decrease line flushing; 9.Increase water waste patrols; 10. Implement drought surcharges and penalties
3	30%	Projected supply insufficient to provide 70% of normal demand or contamination of 20% of water supply. Actions (All Shortage Level 1-2 Restrictions plus these added actions): 1. Water features may not be filled or replenished; 2. Prohibit vehicle washing except at facilities using recycled or recirculating water; 3. Implement or modify drought rate structure (25% rate increase); 4. Require flow restrictors for washers
4	40%	Projected supply insufficient to provide 60% of normal demand or contamination of 30% of water supply. Actions (All Shortage Level 1-3 Restrictions plus these added actions): 1. No watering of lawns or irrigation; 2. No issuance of new construction meters; 3. Moratorium or net zero demand increase on new connections; 4. 50% Rate increase and penalties for excess use
5	≥ 50%	Projected supply insufficient to provide 50% of normal demand or contamination of 40% of water supply. Actions (All Shortage Level 1-4 Restrictions plus these added actions): 1. Penalties for excess use; 2. Revise water allocations and rate structures as needed.

NOTES:

Submittal Table 8-2: Demand Reduction Actions

Shortage Level	Demand Reduction Actions ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? ***For Retail Suppliers Only*** *Drop Down List*
Add additional rows as needed				
1	Landscape - Restrict or prohibit runoff from landscape irrigation	1.0%		Yes
1	CII - Lodging establishment must offer opt out of linen service	0.5%		Yes
1	CII - Restaurants may only serve water upon request	0.5%		Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	1.0%	Must use recycled or recirculated water	Yes
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	1.5%		Yes
1	Other - Require automatic shut of hoses	0.5%		Yes
1	Other - Prohibit use of potable water for washing hard surfaces	2.0%		Yes
1	Expand Public Information Campaign	3.0%		Yes
2	Landscape - Limit landscape irrigation to specific times	1.0%	Watering only allowed before 10 a.m. or after 6 p.m.	Yes
2	Landscape - Limit landscape irrigation to specific days	1.0%	3 days/week from June 1 to September 15; 2 days/week the rest of the year	Yes
2	Other - Prohibit use of potable water for construction and dust control	1.0%		Yes
2	Other	1.0%	Implement Water allocations based on average 2013 usage minus conservation savings	Yes
2	Improve Customer Billing	0.5%		Yes
2	Provide Rebates on Plumbing Fixtures and Devices	0.5%		Yes
2	Provide Rebates for Landscape Irrigation Efficiency	1.0%		Yes
2	Provide Rebates for Turf Replacement	1.0%		Yes
2	Decrease Line Flushing	1.0%		Yes
2	Increase Water Waste Patrols	1.0%		Yes
2	Implement or Modify Drought Rate Structure or Surcharge	1.0%		Yes
3	Other water feature or swimming pool restriction	2.0%		Yes
3	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	2.0%		Yes
3	Implement or Modify Drought Rate Structure or Surcharge	6.0%	25% Rate Increase	Yes
4	Landscape - Prohibit all landscape irrigation	5.0%		Yes
4	Other	1.0%	No issuance of new construction meters	Yes
4	Moratorium or Net Zero Demand Increase on New Connections	2.0%	50% rate increase and penalties for excessive use	Yes
4	Other	2.0%	50% Rate Increase and Higher Stage 4 penalties for excessive use	Yes
5	Other	5.0%	Higher Stage 5 penalties for excessive use	Yes
5	Other	5.0%	Revise Water Allocations and Rate Structure as Needed; May Include 100% Rate Increase	Yes

NOTES:

Submittal Table 8-3: Supply Augmentation and Other Actions			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*
Add additional rows as needed			
1	Expand Public Information Campaign	3%	
2	Improve Customer Billing	0.50%	
2	Implement or Modify Drought Rate Structure or Surcharge	1%	
3	Implement or Modify Drought Rate Structure or Surcharge	6%	Includes 25% Rate Increase
4	Implement or Modify Drought Rate Structure or Surcharge	2%	Includes 50% Rate Increase
5	Implement or Modify Drought Rate Structure or Surcharge	5%	Includes 100% Rate Increase
NOTES:			

Submittal Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
El Centro	Yes	Yes
Imperial Irrigation District	Yes	Yes
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Imperial County	Yes	Yes

NOTES: The City of El Centro does not serve any other cities outside its own boundaries,

Urban Water Supplier: *City of El Centro*

Water Delivery Product

Retail Potable Deliveries

Table O-1B: Recommended Energy Reporting - Total Utility Approach				
Enter Start Date for Reporting Period	1/1/2020	**Urban Water Supplier Operational Control**		
End Date	12/31/2020			
☐ Is upstream embedded in the values reported?		**Sum of All Water Management Processes**	**Non-Consequential Hydropower**	
Water Volume Units Used	*AF*	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process (volume unit)		*7580*		*7580*
Energy Consumed (kWh)		*3023000*		*3023000*
Energy Intensity (kWh/vol. converted to MG)		*1223.9*	*0.0*	*1223.9*

Quantity of Self-Generated Renewable Energy

kWh

Data Quality *(Estimate, Metered Data, Combination of Estimates and Metered Data)*

Metered Data

Data Quality Narrative:

Energy consumed and volume into distribution based on metered use data.

Narrative:

The "Volume of Water Entering Process" is equal to the total volume of water entering the City's distribution system from the WTP. The "Energy Consumed" is the total amount of kWh used at the City's two pumping stations at the WTP and the La Brucherie Reservoir site, as well as some additional process pumping at the WTP.

APPENDIX C

Water Conservation Ordinance No. 17-01

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ORDINANCE 17- 01

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF EL CENTRO AMENDING CHAPTER 28 ARTICLE III OF THE CITY CODE REGARDING WATER CONSERVATION REGULATIONS AND RESTRICTIONS.

THE CITY COUNCIL OF THE CITY OF EL CENTRO, CALIFORNIA DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Chapter 28, Article III, Sections 28-50 through Section 28-55 of the City of El Centro City Code are hereby repealed in their entirety and readopted to read as follows:

Sec. 28-50. - Generally.

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, wasteful use of water should be eliminated. It shall be unlawful for any person, firm, partnership, association, corporation, political entity (including the City) or any other water department customer to use water in a manner inconsistent with this regulation.

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

(1) Use of potable water to irrigate turf, ground-cover, shrubbery, crops, vegetation, and trees in such a manner as to result in runoff for more than two (2) minutes;
(2) Use of potable water in outdoor landscapes in a manner that causes runoff to non-irrigated areas, public walkways, roadways, parking lots, structures or an adjacent property;
(3) Allowing potable water to escape from breaks within a customer's plumbing system for more than twenty-four (24) hours after the customer is notified or discovers the break;
(4) The use of running water to wash vehicles shall be prohibited, except to wash such vehicles at commercial or fleet vehicle washing facilities using water recycling equipment. The use of buckets and stop nozzles on hoses, for rinsing only, shall be permitted; and
(5) The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.

Sec. 28-51. - Water conservation plan implementation.

The water department shall monitor and evaluate the projected supply and demand for water by its customers and any state proclamations regarding drought conditions. In the event of a water shortage and/or statewide drought, the water department shall recommend that the council make a determination, by resolution, that a water shortage exists and that the appropriate water conservation plan shall take effect, as provided in this article. The City Council may discontinue any stage or may implement another stage as necessary. Upon a finding by the City Council that a water shortage no longer exists, any water shortage stage then in effect shall terminate.

Sec. 28-52. - Water conservation plans.

(a) STAGE 1 WATER CONSERVATION PLAN.

Under a stage 1 water conservation plan, in addition to those restrictions set forth in section 28-50 above, the following prohibitions and restrictions on a customer's use of potable water shall apply:

(1) Potable water may not be applied to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots or structures.

(2) A hose that dispenses potable water may not be used to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device that causes it to cease dispensing water immediately when not in use
(3) Potable water may not be applied to hardscapes, driveways, parking lots and walkways except, to protect public health and safety.
(4) Potable water may not be used in a fountain or other decorative water feature, except where the water is part of a recirculating system.
(5) Potable water may not be used for outdoor irrigation during and forty-eight (48) hours following measurable precipitation.
(6) No restaurant, hotel, café, cafeteria or other public place where food is sold, served or offered for sale shall serve drinking water to any customer unless requested.
(7) Potable water may not be used to irrigate ornamental turf on public street medians.
(8) Potable water may not be used to irrigate landscapes of new homes and buildings in a manner inconsistent with the requirements of the California Building Standards Commission and the Department of Housing and Community Development.
(9) Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. Each hotel or motel shall prominently display notice of this option in each bathroom, using clear and understandable language.
(10) Customers shall be notified by the City in the event the customer has a leak that is within the customer's control.

(b) STAGE 2 WATER CONSERVATION PLAN

Under a stage 2 water conservation plan, in addition to the restrictions set forth in section 28-52(a) above, the following actions are mandatory:

(1) Landscape/turf irrigation shall only be permitted between 6:00 p.m. and 10:00 a.m.
(2) Residential and commercial turf/laws watering days are restricted to three (3) days per week from June 1 through September 15.
    (a) Properties located west of Eighth Street shall be permitted to water on Monday, Wednesday and Friday.
    (b) Properties located east of Eighth Street shall be permitted to water on Tuesday, Thursday and Saturday.
    (c) Adding water time to compensate for lost days is prohibited.
(3) Residential and commercial turf/lawn watering days are restricted to two (2) days per week from September 16 through May 31.
    (a) Properties located west of Eighth Street shall be permitted to water on Monday and Friday.
    (b) Properties located east of Eighth Street shall be permitted to water on Tuesday and Saturday.
    (c) Adding water time to compensate for lost days is prohibited.
(4) Outdoor irrigation of commercial, industrial and institutional facilities shall be restricted to the same watering days as residential irrigation and limited to between the hours of 6:00 p.m. and 10:00 a.m., according to a schedule determined by City staff following consultation with the customer. A commercial, industrial or institutional customer may implement an alternative water use reduction plan that achieves reductions in water use equivalent to those expected from the restrictions prescribed herein, if approved in advance by the director.
(5) City parks and schools shall comply with the restrictions in subsection (b)(4) of this section.
(6) Potable water may not be used for construction, compaction, dust control, street or parking lot sweeping or building wash down where non-potable water is sufficient.

(7) City customers are encouraged not to empty and refill swimming pools from June 1 through October 31 unless necessary to address a health or safety emergency.
(8) City will establish water allocation in accordance with the City's Water Shortage Contingency Plan for Stage 2 and corresponding drought penalty over the allocation.

(c) STAGE 3 WATER CONSERVATION PLAN
Under a stage 3 water conservation plans, in addition to the restrictions set forth in section 28-52 above, the following actions are mandatory:

(1) Water features such as fountains are not to be filled or replenished.

(2) Vehicle washing is prohibited, except at facilities using recycled or recirculated water.

(3) City will implement flow restrictors for wasters program.

(4) City will establish water allocation in accordance with the City's Water Shortage Contingency Plan for Stage 3 and corresponding drought penalty over the allocation.

(5) City will implement Drought Rate Structure in accordance to the City's Water Shortage Contingency Plan Stage 3.

(d) STAGE 4 WATER CONSERVATION PLAN
Under a stage 4 water conservation plan, in addition to the restrictions set forth in section 28-52 above, the following actions are mandatory:

(1) Lawns are not to be watered

(2) New construction meters will not be issued

(3) City will establish water allocation in accordance with the City's Water Shortage Contingency Plan for Stage 4 and corresponding drought penalty over the allocation.

(4) City will implement Drought Rate Structure in accordance to the City's Water Shortage Contingency Plan Stage 4.

(e) STAGE 5 WATER CONSERVATION PLAN
Under a stage 5 water conservation plan, in addition to the restrictions set forth in section 28-52 above, the following actions are mandatory:
(1) City will establish water allocation in accordance with the City's Water Shortage Contingency Plan for Stage 5 and corresponding drought penalty over the allocation.

(2) City will implement Drought Rate Structure in accordance to the City's Water Shortage Contingency Plan Stage 5.

Sec. 28-53. – intentionally blank

Sec. 28-54. - Water allocation.
It shall be unlawful to violate customer water rationing regulations, including regulations intended to preclude excessive water usage and specifying maximum water usage limitations.
Sec. 28-55. - Administrative enforcement.
(a) Penalties. The purpose of the administrative penalties assessed pursuant to this section is to assure future compliance with the provisions of this article by the customer who was cited through the imposition of penalties so as to create a meaningful disincentive to commit future violations of the provisions of this article. In acknowledgment of the fact that the City's water

is a scarce and irreplaceable commodity and that this article is intended to equitably distribute that commodity among water department customers and to assure that, to the extent feasible, City water is conserved and used only for purposes deemed necessary for public health and safety, the penalty schedule herein prescribed is not to be construed as creating a "water pricing" structure pursuant to which customers may elect to pay for additional water at significantly higher rates. To this end, a customer's repeated violation of this article shall result in either the installation of a flow restriction device at the customer's cost or disconnection of the customer's property from the City's water service system.

(b) The enforcement agency and enforcement official may exercise any enforcement powers as provided in El Centro City Code chapter 18, articles X and XI, as may be necessary to effectively implement and enforce this article.

(c) Any person, firm, partnership, association, corporation, political entity or other water department customer violating any provision of this article may be assessed an administrative citation by the City.

(d) Administrative penalties for failure to comply with the water conservation regulations and restrictions set forth in this article are as follows:

(1) *Warning Notice:* Written warning notice of violation and opportunity to correct violation.

(2) *First Citation:* Offense within the preceding twelve (12) calendar months is punishable by administrative citation not to exceed one hundred dollars ($100.00)

(3) *Second Citation:* Offense within the preceding twelve (12) calendar months is punishable by administrative citation not to exceed two hundred dollars ($200.00)

(4) *Third and Subsequent Citations:* Offense within the preceding twelve (12) calendar months is punishable by administrative citation not to exceed one hundred dollars ($500.00)

(5) *Commercial/industrial/institutional customers:* Administrative citations shall be double the amounts set forth in this section.

(6) *Discontinuing service:* In addition to any citations and the installation of a water flow restrictor, the director may disconnect a customer's water service for willful violations of mandatory restrictions and regulations in this article. Upon disconnection of water service, a written notice shall be served upon the customer which shall state the time, place, and general description of the prohibited or restricted activity and the method by which reconnection can be made.

(e) Appeals and hearings shall be provided per El Centro City Code chapter 18, article XI

SECTION 2. The City Council hereby designates the Office of the City Attorney to prepare a summary of this Ordinance and said summary shall be published and a certified copy of the full text of this Ordinance shall be posted in the Office of the City Clerk at least five (5) days prior to the City Council meeting at which this Ordinance is to be adopted.

SECTION 3. This Ordinance shall take effect thirty (30) days from and after its adoption. Within fifteen (15) days after adoption, it shall be published once in a newspaper, published and circulated within the City of El Centro, California.

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INTRODUCED at a regular meeting of the City Council of the City of El Centro California, held on the 7th day of Feb. , 2017.

PASSED AND ADOPTED at a regular meeting of the City Council of the City of El Centro, California, held on the 21st day of Feb. , 2017.

CITY OF EL CENTRO

By: _____
Alex Cardenas, Mayor

ATTEST:

By: _____
L. Diane Caldwell, City Clerk

APPROVED AS TO FORM:
Office of the City Attorney

By: _____
Elizabeth L. Martyn, City Attorney

STATE OF CALIFORNIA)
COUNTY OF IMPERIAL) ss
CITY OF EL CENTRO)

I, L. Diane Caldwell, City Clerk of the City of El Centro, California, do hereby certify that the foregoing Ordinance No. 17- 01 had its first reading on Feb. 7, 2017, and had its second reading on Feb. 21, 2017, and was passed by the following vote:

AYES: Jackson, Silva, Cardenas, Viegas-Walker, Garcia
NOES: None
ABSENT: None
ABSTAINED: None

AYES: Jackson, Silva, Cardenas, Viegas-Walker, Garcia
NOES: None
ABSENT: None
ABSTAINED: None

By _____
L. Diane Caldwell, City Clerk

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APPENDIX D

Proof of Publication Notice for Public Hearing

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APPENDIX E

Resolution No. 21-XX

Adopting 2020 UWMP and WSCP

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APPENDIX F

SBX7-7 Compliance Tables

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SB X7-7 Table 0: Units of Measure Used in 2020 UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*
NOTES:

SB X7-7 Table 2: Method for 2020 Population Estimate	
Method Used to Determine 2020 Population (may check more than one)	
☑	**1. Department of Finance** (DOF) or **American Community Survey** (ACS)
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: 2020 Service Area Population	
2020 Compliance Year Population	
2020	45,657
NOTES:	

SB X7-7 Table 4: 2020 Gross Water Use							
		2020 Deductions					
Compliance Year 2020	**2020 Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**Exported Water ***	**Change in Dist. System Storage*** (+/-)	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use***	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	**2020 Gross Water Use**
	7,580	-	1	-	-	-	**7,579**

*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	IID
This water source is *(check one)* **:**	
☐	The supplier's own water source
☑	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	7,580	-	7,580

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)		
2020 Gross Water *Fm SB X7-7 Table 4*	**2020 Population** *Fm SB X7-7 Table 3*	**2020 GPCD**
7,579	45,657	**148**
NOTES:		

SB X7-7 Table 9: 2020 Compliance

Actual 2020 GPCD[1]	Optional Adjustments to 2020 GPCD (Enter "0" if Adjustment Not Used)			TOTAL Adjustments[1]	Adjusted 2020 GPCD [1] *(Adjusted if applicable)*	2020 Confirmed Target GPCD [1, 2]	**Did Supplier Achieve Targeted Reduction for 2020?**
	Extraordinary Events[1]	Weather Normalization[1]	Economic Adjustment[1]				
148	-	-	-	-	148	198	**YES**

[1] *All values are reported in GPCD*

[2] ***2020 Confirmed Target GPCD*** *is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.*

NOTES:

2015 UWMP SB X7-7 Verification Form

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES:

2015 UWMP SB X7-7 Verification Form

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	9,036	Acre Feet
	2008 total volume of delivered recycled water	-	Acre Feet
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	2001	
	Year ending baseline period range[3]	2010	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range[4]	2007	

[1] If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. *[2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.*

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

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

NOTES:

2015 UWMP SB X7-7 Verification Form

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☑	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

2015 UWMP SB X7-7 Verification Form

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	2001	38,166
Year 2	2002	38,118
Year 3	2003	38,456
Year 4	2004	38,589
Year 5	2005	39,147
Year 6	2006	39,957
Year 7	2007	39,617
Year 8	2008	40,874
Year 9	2009	41,804
Year 10	2010	42,544
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2003	38,456
Year 2	2004	38,589
Year 3	2005	39,147
Year 4	2006	39,957
Year 5	2007	39,617
2015 Compliance Year Population		
2015		44,847
NOTES:		

2015 UWMP SB X7-7 Verification Form

SB X7-7 Table 4: Annual Gross Water Use *

Baseline Year *Fm SB X7-7 Table 3*		Volume Into Distribution System *This column will remain blank until SB X7-7 Table 4-A is completed.*	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water *This column will remain blank until SB X7-7 Table 4-B is completed.*	Water Delivered for Agricultural Use	Process Water *This column will remain blank until SB X7-7 Table 4-D is completed.*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	2001	8,762			-		-	8,762
Year 2	2002	8,839			-		-	8,839
Year 3	2003	8,774			-		-	8,774
Year 4	2004	8,998			-		-	8,998
Year 5	2005	9,152			-		-	9,152
Year 6	2006	9,679			-		-	9,679
Year 7	2007	9,159			-		-	9,159
Year 8	2008	9,036			-		-	9,036
Year 9	2009	8,784			-		-	8,784
Year 10	2010	8,046			-		-	8,046
Year 11	0	-			-		-	-
Year 12	0	-			-		-	-
Year 13	0	-			-		-	-
Year 14	0	-			-		-	-
Year 15	0	-			-		-	-
10 - 15 year baseline average gross water use								**8,923**
5 Year Baseline - Gross Water Use								
Year 1	2003	8,774			-		-	8,774
Year 2	2004	8,998			-		-	8,998
Year 3	2005	9,152			-		-	9,152
Year 4	2006	9,679			-		-	9,679
Year 5	2007	9,159			-		-	9,159
5 year baseline average gross water use								**9,152**
2015 Compliance Year - Gross Water Use								
2015		7,117	-		-		-	**7,117**

* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3

NOTES:

2015 UWMP SB X7-7 Verification Form

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	IID
This water source is:	
☐	The supplier's own water source
☑	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	2001	8762		8,762
Year 2	2002	8839		8,839
Year 3	2003	8774		8,774
Year 4	2004	8998		8,998
Year 5	2005	9152		9,152
Year 6	2006	9679		9,679
Year 7	2007	9159		9,159
Year 8	2008	9036		9,036
Year 9	2009	8784		8,784
Year 10	2010	8046		8,046
Year 11	0			-
Year 12	0			-
Year 13	0			-
Year 14	0			-
Year 15	0			-
5 Year Baseline - Water into Distribution System				
Year 1	2003	8774		8,774
Year 2	2004	8998		8,998
Year 3	2005	9152		9,152
Year 4	2006	9679		9,679
Year 5	2007	9159		9,159
2015 Compliance Year - Water into Distribution System				
2015		7,117		7,117

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

2015 UWMP SB X7-7 Verification Form

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	2001	38,166	8,762	205
Year 2	2002	38,118	8,839	207
Year 3	2003	38,456	8,774	204
Year 4	2004	38,589	8,998	208
Year 5	2005	39,147	9,152	209
Year 6	2006	39,957	9,679	216
Year 7	2007	39,617	9,159	206
Year 8	2008	40,874	9,036	197
Year 9	2009	41,804	8,784	188
Year 10	2010	42,544	8,046	169
Year 11	0	-	-	
Year 12	0	-	-	
Year 13	0	-	-	
Year 14	0	-	-	
Year 15	0	-	-	
10-15 Year Average Baseline GPCD				**201**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2003	38,456	8,774	204
Year 2	2004	38,589	8,998	208
Year 3	2005	39,147	9,152	209
Year 4	2006	39,957	9,679	216
Year 5	2007	39,617	9,159	206
5 Year Average Baseline GPCD				**209**
2015 Compliance Year GPCD				
2015		44,847	7,117	**142**

NOTES:

2015 UWMP SB X7-7 Verification Form

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	201
5 Year Baseline GPCD	209
2015 Compliance Year GPCD	142
NOTES:	

2015 UWMP SB X7-7 Verification Form

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☐	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☑	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES:		

2015 UWMP SB X7-7 Verification Form

SB X7-7 Table 7-E: Target Method 3

Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
☐		North Coast	137	130
☐		North Lahontan	173	164
☐		Sacramento River	176	167
☐		San Francisco Bay	131	124
☐		San Joaquin River	174	165
☐		Central Coast	123	117
☐		Tulare Lake	188	179
☐		South Lahontan	170	162
☐		South Coast	149	142
☑	100%	Colorado River	211	200
Target *(If more than one region is selected, this value is calculated.)*				**200**

NOTES:

2015 UWMP SB X7-7 Verification Form

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	Calculated 2020 Target[2]	**Confirmed 2020 Target**
209	198	200	**198**

[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD *[2] 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.*

NOTES:

APPENDIX G

Water Loss Audit Reports

NOTE: The City's audits filed in 2018 and 2019 contain unreasonably high water loss estimates (34.1% and 26.4% in 2018 and 2019, respectively). As noted under the "Comments" tab in the 2018 and 2019 audit reports, the very high water loss estimates may have been due to a City-wide meter replacement program during those two years, which impacted the quality of data collected and thereby significantly skewed the results. It was therefore deemed prudent for the sake of consistency and accuracy, not to rely on the water loss audit data in this UWMP but instead calculate losses (non-revenue water) as explained in Section 4.4.4 of this UWMP. While the following audits cannot be relied on for the previously stated reasons, they are being included in this Appendix to comply with DWR submittal requirements.

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AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: City of El Centro
Reporting Year: 2015 (1/2015 - 12/2015)

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

	Grading	Value		Pcnt:	Value:
Volume from own sources:	n/a	0.000 acre-ft/yr			acre-ft/yr
Water imported:	8	7,117.000 acre-ft/yr			acre-ft/yr
Water exported:	n/a	0.000 acre-ft/yr			acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 7,117.000 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

	Grading	Value	Pcnt:	Value:
Billed metered:	7	6,552.000 acre-ft/yr		
Billed unmetered:	n/a	0.000 acre-ft/yr		
Unbilled metered:	n/a	0.000 acre-ft/yr		
Unbilled unmetered:	8	88.963 acre-ft/yr	1.25%	acre-ft/yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 6,640.963 acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption) 476.038 acre-ft/yr

Apparent Losses

	Grading	Value	Pcnt:	Value:
Unauthorized consumption:		17.793 acre-ft/yr	0.25%	acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

	Grading	Value		
Customer metering inaccuracies:	7	20.000 acre-ft/yr		20.000 acre-ft/yr
Systematic data handling errors:	7	16.380 acre-ft/yr	0.25%	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 54.173 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 421.865 acre-ft/yr

WATER LOSSES: 476.038 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 565.000 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

	Grading	Value	
Length of mains:	7	148.0	miles
Number of active AND inactive service connections:	8	9,906	
Service connection density:		67	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

	Grading	Value	
Average operating pressure:	8	65.0	psi

COST DATA

	Grading	Value	
Total annual cost of operating water system:	7	$12,000,000	$/Year
Customer retail unit cost (applied to Apparent Losses):	7	$3.63	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	8	$875.00	$/acre-ft

☑ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 72 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Water imported
2: Billed metered
3: Unauthorized consumption

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: City of El Centro (1310004)
Reporting Year: 2016 1/2016 - 12/2016

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

					Pcnt:	Value:	
Volume from own sources:	3	2,385.980	MG/Yr	3			MG/Yr
Water imported:	n/a	0.000	MG/Yr				MG/Yr
Water exported:	n/a	0.000	MG/Yr				MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 2,385.980 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	3	2,189.000	MG/Yr			
Billed unmetered:	n/a	0.000	MG/Yr			
Unbilled metered:	9	44.032	MG/Yr			
Unbilled unmetered:	5	5.965	MG/Yr		5.965	MG/Yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 2,238.997 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption) 146.983 MG/Yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		5.965	MG/Yr	0.25%		MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	1	45.572	MG/Yr	2.00%		MG/Yr
Systematic data handling errors:		5.473	MG/Yr	0.25%		MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 57.010 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 89.974 MG/Yr

WATER LOSSES: 146.983 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 196.980 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	120.0	miles
Number of active AND inactive service connections:	9	9,899	
Service connection density:		82	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	7	60.0	psi

COST DATA

Total annual cost of operating water system:	7	$6,511,229	$/Year	
Customer retail unit cost (applied to Apparent Losses):	5	$2.83	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$270.38	$/Million gallons	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 44 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Billed metered
3: Customer metering inaccuracies

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: City of El Centro (1310004)
Reporting Year: 2018 1/2018 - 12/2018

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

					Pcnt:	Value:	
Volume from own sources:	3	2,526.190	MG/Yr	3			MG/Yr
Water imported:	n/a	0.000	MG/Yr				MG/Yr
Water exported:	n/a	0.000	MG/Yr				MG/Yr
WATER SUPPLIED:		**2,526.190**	MG/Yr				

Enter negative % or value for under-registration
Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

Click here: ? for help using option

				Pcnt:	Value:	
Billed metered:	3	1,616.242	MG/Yr			
Billed unmetered:	n/a	0.000	MG/Yr			
Unbilled metered:	9	44.032	MG/Yr			
Unbilled unmetered:	5	3.789	MG/Yr		3.789	MG/Yr
AUTHORIZED CONSUMPTION:		**1,664.063**	MG/Yr			

Use buttons to select percentage of water supplied **OR** value

				Pcnt:	Value:	
WATER LOSSES (Water Supplied - Authorized Consumption)		**862.127**	MG/Yr			
Apparent Losses						
Unauthorized consumption:		6.315	MG/Yr	0.25%		MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	1	16.770	MG/Yr	1.00%		MG/Yr
Systematic data handling errors:		4.041	MG/Yr	0.25%		MG/Yr
Apparent Losses:		**27.127**	MG/Yr			

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:		**835.000**	MG/Yr
WATER LOSSES:		**862.127**	MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER:		**909.948**	MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	120.0	miles
Number of active AND inactive service connections:	9	9,899	
Service connection density:		82	conn./mile main
Are customer meters typically located at the curbstop or property line?		Yes	
Average length of customer service line:			

(length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	5	60.0	psi

COST DATA

Total annual cost of operating water system:	10	$6,982,213	$/Year	
Customer retail unit cost (applied to Apparent Losses):	5	$3.00	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$199.05	$/Million gallons	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 46 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Billed metered
3: Customer metering inaccuracies

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: City of El Centro (1310004)
Reporting Year: 2019 1/2019 - 12/2019

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

					Pcnt:	Value:	
Volume from own sources:	3	2,399.371	MG/Yr	3			MG/Yr
Water imported:	n/a	0.000	MG/Yr				MG/Yr
Water exported:	n/a	0.000	MG/Yr				MG/Yr
WATER SUPPLIED:		**2,399.371**	MG/Yr				

Enter negative % or value for under-registration
Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	3	1,718.520	MG/Yr			
Billed unmetered:	n/a	0.000	MG/Yr			
Unbilled metered:	9	44.032	MG/Yr			
Unbilled unmetered:	5	3.599	MG/Yr		3.599	MG/Yr
AUTHORIZED CONSUMPTION:		**1,766.151**	MG/Yr			

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption)

633.220 MG/Yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:	5.998	MG/Yr	0.25%		MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	1	17.804	MG/Yr	1.00%	MG/Yr
Systematic data handling errors:		4.296	MG/Yr	0.25%	MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: **28.098** MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: **605.122** MG/Yr

WATER LOSSES: **633.220** MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: **680.851** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	120.0	miles
Number of active AND inactive service connections:	9	9,899	
Service connection density:		82	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	5	60.0	psi

COST DATA

Total annual cost of operating water system:	10	$6,692,382	$/Year	
Customer retail unit cost (applied to Apparent Losses):	5	$3.56	$/1000 gallons (US)	
Variable production cost (applied to Real Losses):	5	$209.57	$/Million gallons	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 46 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Billed metered
3: Customer metering inaccuracies