

Chaparral Water System Production Capacity and Demands Overview



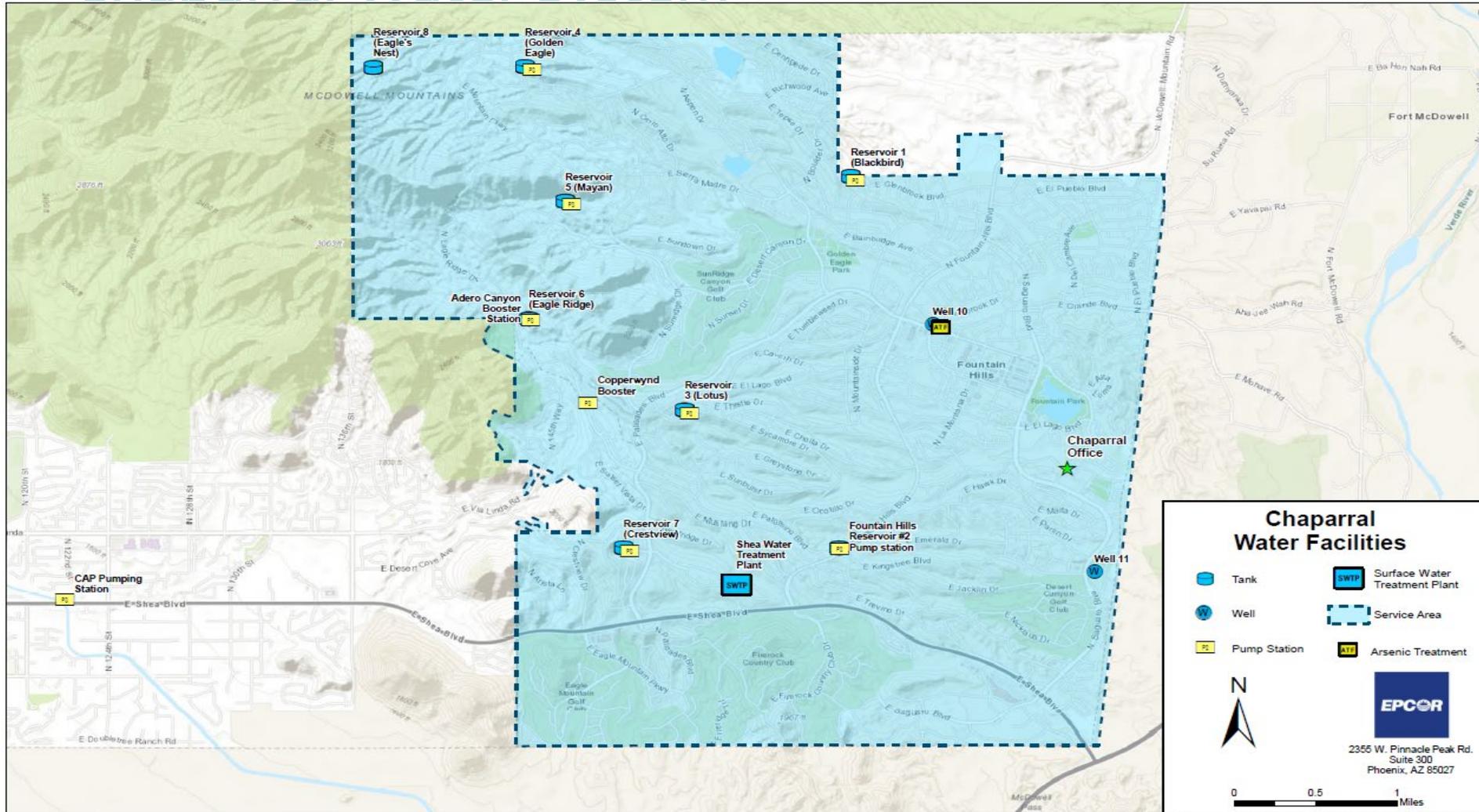
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Chaparral Water System



Date: December 19, 2018

Source: EPCOR, ESRI

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Chaparral Water System Production Capacity



- Surface Water (Shea Water Treatment Plant)
 - 15 Million Gallons per Day
 - 46 acre-feet / day
- Groundwater Production from Wells 10 and 11
 - 5 Million Gallons per Day
 - 15.3 acre-feet / day
 - Wells 8 & 9 inactive, could produce 2.4 MGD with new treatment
- Maximum Current Firm Potable Water Production
 - 20 MGD
 - 61.3 acre-feet / day
- Maximum Storage Volume in Reservoirs
 - 11.4 Million gallons of storage
 - 35 acre feet of storage

Chaparral Water System Demands



- Average Day Demand = 5.63 MGD (17 af/day)
- Maximum Day Demand in 2020 = 9 MGD (27.6 af/day)
- Annual Demand in 2020 = 6,305 af/yr
- Annual CAP Allocation = 8,909 af/yr
- Shea Water Treatment Plant alone can handle all demands
- Current active groundwater wells can handle about a third of days by themselves
- If CAP were to go completely dry*, Wells 8 and 9 could be brought back into service
 - * Doug Dunham will explain why this is not likely
 - 30 days where maximum demand exceeds production
 - Wells 8 & 9 would require standard treatment for arsenic and nitrogen
 - Would need 12 months advance notice to design, build and install necessary equipment



EPCOR USA

Arizona Water & Drought: Planning and Preparation

June 15, 2021

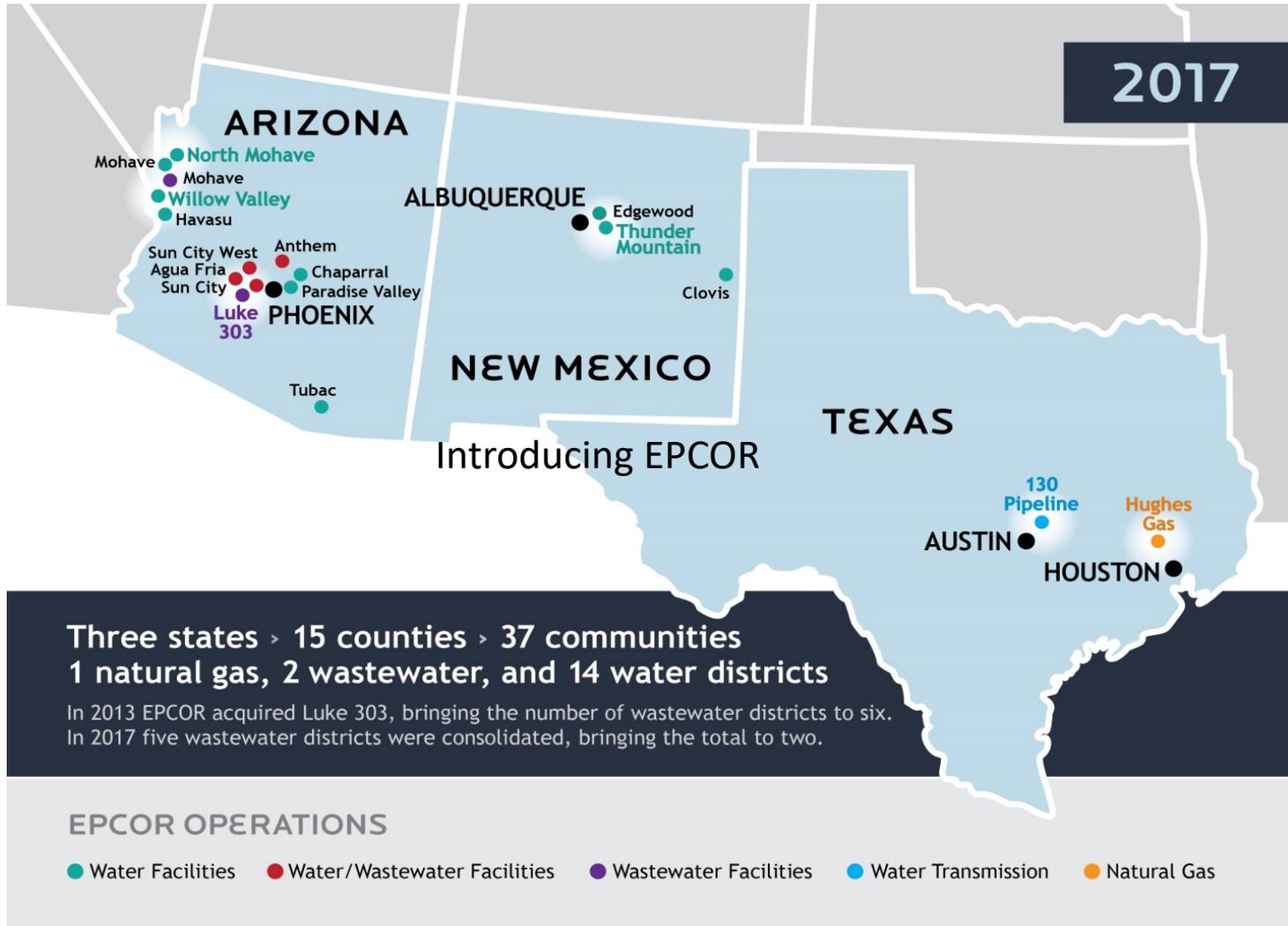
Douglas W. Dunham

Water Resources Manager, EPCOR Water (USA) Inc.

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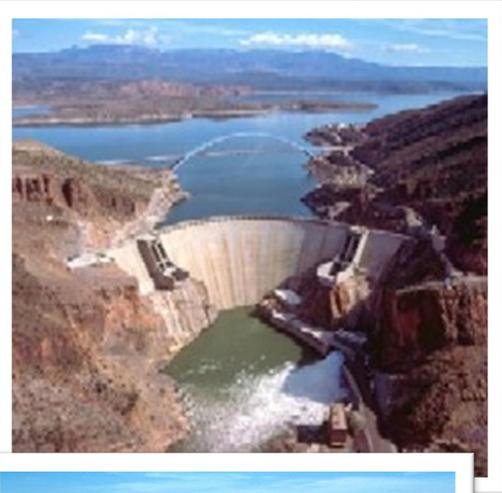


Introducing EPCOR

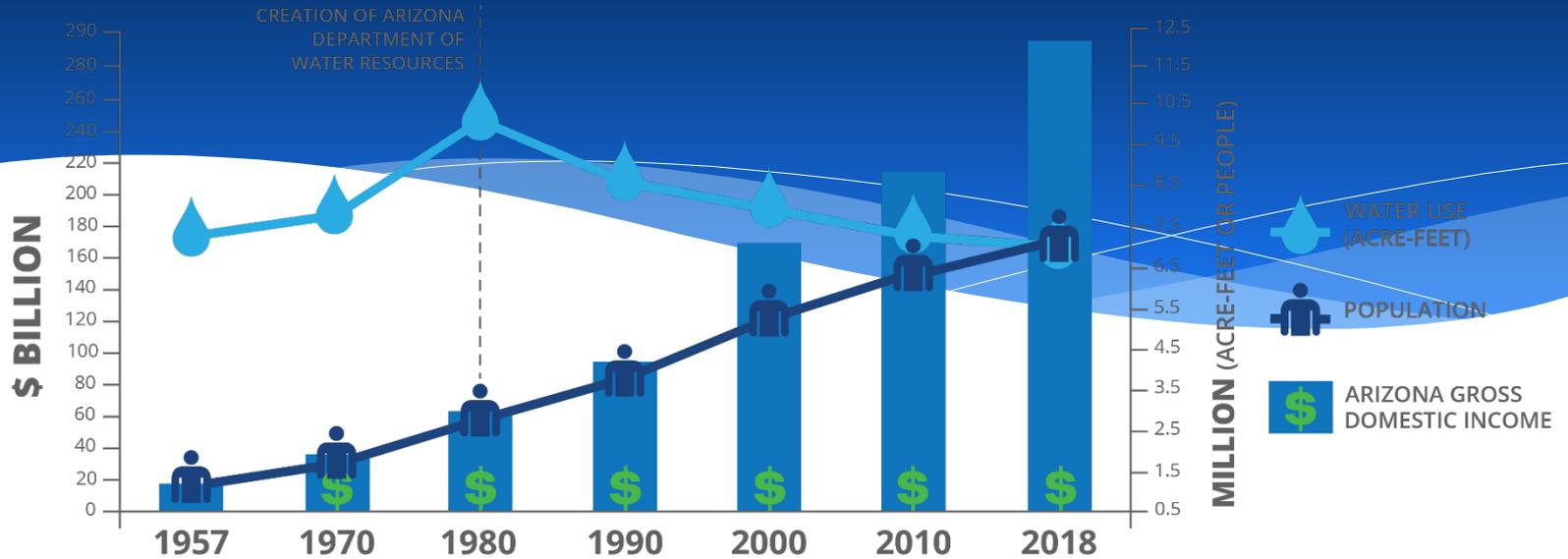


Sources of Water In Arizona

- **Groundwater**
- **Surface Water**
- **Colorado River Water**
 - Main Stem
 - Central Arizona Project
- **Reclaimed Water**



ARIZONA'S WATER MANAGEMENT SUCCESS



Source: ADWR, 2020

TOTAL WATER USE (IN MILLIONS ACRE/FEET)

1957 7.1 MAF
 2018 7 MAF

-1% CHANGE FROM 1957-2018

POPULATION (IN MILLIONS)

1957 1.1
 2018 7.1

545% CHANGE FROM 1957-2018

GROSS DOMESTIC INCOME (IN BILLIONS)

1957 13.4
 2018 287.9

2,049% CHANGE FROM 1957-2018

Groundwater Management Act (1980)

- **Created Arizona Department of Water Resources**
- **Goals of the Groundwater Management Act:**
 - Control severe groundwater depletion
 - Provide the means for allocating Arizona's limited groundwater resources to most effectively meet the state's changing water needs
 - Augment Arizona's groundwater supplies through development of additional water supplies
 - Preserve groundwater for use in drought

Water management in AMA's

- Assured Water Supply
 - 100-year renewable water supply
 - Required before subdivision lots can be sold
 - CCWC is designated 100-year AWS
- Recharge & Recovery
- Arizona Water Banking Authority



Underground Storage and Recovery



- Allows the storage and later recovery of renewable supplies - 1986
 - Additional drought insurance
 - Total of over 3-trillion gallons stored
 - Enough to serve City of Phoenix for 30 years
 - CAP water
 - Reclaim Water
 - Annual storage/recovery surface water

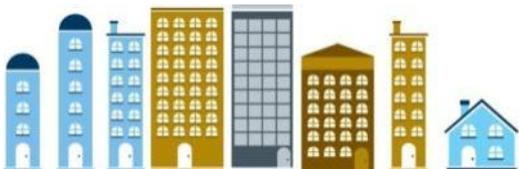
Arizona Water Banking Authority



- AWBA separate entity within ADWR
 - Actual storage of water supplies; not a rights trading program
 - Created in 1996
 - Use state general funds & withdrawal fees
 - Provide backup supplies for drought
 - Provide backup supplies for tribal settlements
 - Provides inter-state banking (Nevada)
 - 4.4 MAF stored (3.8 AZ, .6 MAF NV)

CAP Priorities

- Within the CAP system different water allocations have different priorities
 - Highest: M&I pool
 - EPCOR about 30 KAF M&I CAP
 - 8,909 af/yr CCWC
 - Non-Indian AG pool
 - AG pool
 - Excess pool



Conservation Program

- Self audit kits
- Interior low flow retrofit kits
- Landscaping watering guide
- Desert landscaping low water use plant guide
- Leak detection assistance
- New enhanced billing; self notification

Lower Basin Drought Contingency Plan

- LBDCP goal is to protect water levels in Lake Mead
 - AZ & NV agree to take early cuts
 - CA agree to take cuts
 - Conservation programs to “store” in Mead for later recovery (ICS)
 - Conservation programs for system conservation (water left in system)
 - AZ: in state mitigation for lower priority users
 - Provide higher priority CAP to AG (Pinal AMA)
 - Provide higher priority CAP to NIA
 - State, Federal, & NGO funding for ICS & system conservation
 - Federal funding for AG infrastructure

Probabilities of Shortage Based on Bureau of Reclamation CRSS Model Run – April 2021 using Full Hydrology¹ and **Stress Test Hydrology²** (%)

	2021 ^a	2022	2023	2024	2025
Probability of “Tier Zero” DCP Contribution Condition (Mead ≤ 1,090 ft, > 1,075 ft)	100 100	3 3	5 7	11 9	10 3
Probability of any level of shortage (Mead ≤ 1,075 ft.)	0 0	97 97	94 92	82 91	77 94
Tier 1 Shortage (Mead ≤ 1,075, ≥1,050 ft)	0 0	97 97	81 71	37 31	34 33
Tier 2 Shortage (Mead <1,050, ≥1,025 ft)	0 0	0 0	13 21	44 60	32 36
Shortage Tier 2a (Mead < 1,050, ≥ 1,045 ft)	0 0	0 0	11 17	9 6	5 7
Shortage Tier 2b (Mead < 1,045, ≥ 1,025 ft)	0 0	0 0	2 4	35 53	27 28
Tier 3 Shortage (Mead <1,025ft)	0 0	0 0	0 0	1 <1	11 25

- ¹Full Hydrology uses 113 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2018.
- ²Stress Test Hydrology uses 31 hydrologic inflow sequences based on resampling the observed natural flow record from 1988-2018.
- ^aThe chance of an April switch to Equalization in water year 2021 is negligible.

Source: Bureau of Reclamation – April 2021 CRSS model run.

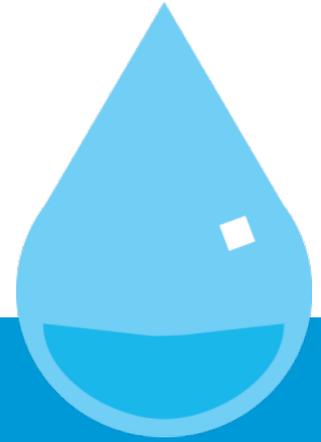
EPCOR Specific Drought Planning

- Maximize use of reclaim water (storage & recovery)
- Maximize use of M&I CAP
- Assisting Water Bank and recovery
- Continued conservation programs
- Partner with other entities for leases and exchanges
- Up-grading of well infrastructure for recovery or GW use
- Participate in LBDCP
 - Provide “bridge” for Pinal AG via storage (in-lieu)
 - Credits created in Pinal for later exchange in Phoenix

Chaparral City Water Company

By The Numbers

- 8,909 acre-feet per year of CAP allocation
- 8,695 acre-feet per year groundwater available
- 9,317 acre-feet per year 100-year Designation
- 17,604 acre-feet per year total supplies
- 3,963.50 acre-feet of long-term storage credits
- 21,567 af total available in any given year
- 6,265 acre-feet 2020 total demand (28% of supplies)
- 2034 year designation expires
- 9,317 expected 2034 demand



Questions?