SCOTTSDALE WATER

Drought Management Plan 2021

Contents

Abbreviations

ADWR	Arizona Department of Water Resources
AF	acre-feet
AMA	Active Management Areas
AWS	Assured Water Supply
BOR	U.S. Bureau of Reclamation
CAP	Central Arizona Project
CGTF	Central Groundwater Treatment Facility
DCP	Drought Contingency Plan
DMP	Drought Management Plan
DMT	drought management team
EMT	Emergency Management Toolbox
gpad	gallons per acre per day
GW	groundwater
IWRMP	Integrated Water Resources Master Plan
MAG	Maricopa Association of Governments
Menu	Demand Side Management Options Menu
MFR	multi-family residence
MGD	million gallons per day
NGTF	North Indian Bend Wash Granular Activated Carbon Treatment Facility
PIO	Public Information Officer
SFR	single family residence
SRP	Salt River Project
SRVWUA	Salt River Valley Water Users Association
WTP	water treatment plant

Introduction and Overview

Recognizing that we live in an arid environment with ever-present drought cycles and climate variability concerns, the City of Scottsdale has been proactive in the planning of long-term, sustainable water supplies for its customers and has secured a diverse and resilient water supply portfolio. These supplies reduce the vulnerability of the community to the risks associated with potential external factors that may result in future supply reductions or limitations. Water shortages can occur and should be planned for whether caused by drought or water delivery infrastructure failure. Scottsdale has analyzed its water demand characteristics during periods of both normal and reduced water supply conditions. Understanding the dynamics of demand management is important as supply reductions or interruptions can present serious challenges to maintaining the health, safety and economic well-being of the community.

The Drought Management Plan (DMP) provides guidelines that can be used to manage water supply and water use during an episode of reduced supply availability. These are based on the establishment of priorities that are designed to consider customer needs, protect the health and safety of the community, preserve environmental resources, and avoid adverse impacts to public activity. The DMP should be reviewed and potentially updated every five years.

The circumstances surrounding water supply reduction events can differ, therefore, these guidelines are intended to provide a framework for timely response while maintaining the flexibility to respond to other unique conditions. These guidelines assist Scottsdale officials in making the necessary decisions throughout the duration of shortage episodes. Scottsdale Water also maintains an emergency response plan separate from the DMP as part of its Emergency Management Toolbox (EMT). The EMT guides the division's operational actions and response to emergency situations.

The DMP consists of two primary components – the identification of events that could trigger water supply reduction episodes and the corresponding actions that are recommended for responding to the events. The DMP identifies five levels of potential water supply reductions accompanied by progressively more stringent actions to address each circumstance.

The following sections of this document describe the individual elements of the DMP, which include:

- Water Supply - including a summary of Scottsdale's water supply portfolio
- Water Demand - projections for years 2020 and 2025
- The Drought Management Team
- Water Supply Shortage and Drought Stages
- Demand Side Management Strategy and Responses
- Demand Management Toolbox

Water Supply

Throughout this document, water is measured in acre-feet (AF) and million gallons per day (MGD). One AF is equal to 325,851 gallons.

Scottsdale's water resources portfolio provides for a continuous, sustainable water supply, which can be delivered to customers at a reasonable cost. Scottsdale's water supplies are consistent with the Arizona Department of Water Resources (ADWR) state regulatory requirements for a designation of Assured Water Supply (AWS). The AWS dictates that cities in the Phoenix Active Management Area must have a physically available, continuous, legal and reliable water supply capable of meeting the needs of its service area for 100 years. The development of Scottsdale's current water resources portfolio is based on a strategic long-term direction emphasizing the increased use of renewable surface water supplies versus pumping groundwater in order to meet the city's water demands. In addition to surface and groundwater supplies, Scottsdale utilizes reclaimed (recycled) water supplies, which is water that has been collected via the sewer system and then treated through an advanced water treatment facility. This reclaimed water is used for irrigation purposes and groundwater recharge.

Scottsdale's potable, or drinking, water resources portfolio consists of three water supplies (Table 1). Each of these supply sources has its own set of delivery and use restrictions based on regulatory, contractual and operational limitations that impact where and how they can be used to meet the community's needs. Scottsdale combines the water resources to strategically meet the needs of its water service area (the boundary in which it serves water). Figure 1 displays Scottsdale's water service area and the location of the water treatment facilities.

TABLE 1 - SCOTTSDALE'S POTABLE WATER SUPPLIES

Supply	Water Source	Infrastructure Components
Central Arizona Project (CAP)	Colorado River water delivered through the CAP canal system	Delivered to Scottsdale CAP Water Treatment Plant through the canal turnout
Salt River Project (SRP)	Salt and Verde rivers delivered through the SRP canal system	Delivered to Chaparral Water Treatment Plant
Groundwater (GW)	Wells located throughout the Scottsdale service area	Well production and groundwater treatment facilities are interconnected with Scottsdale's water distribution system

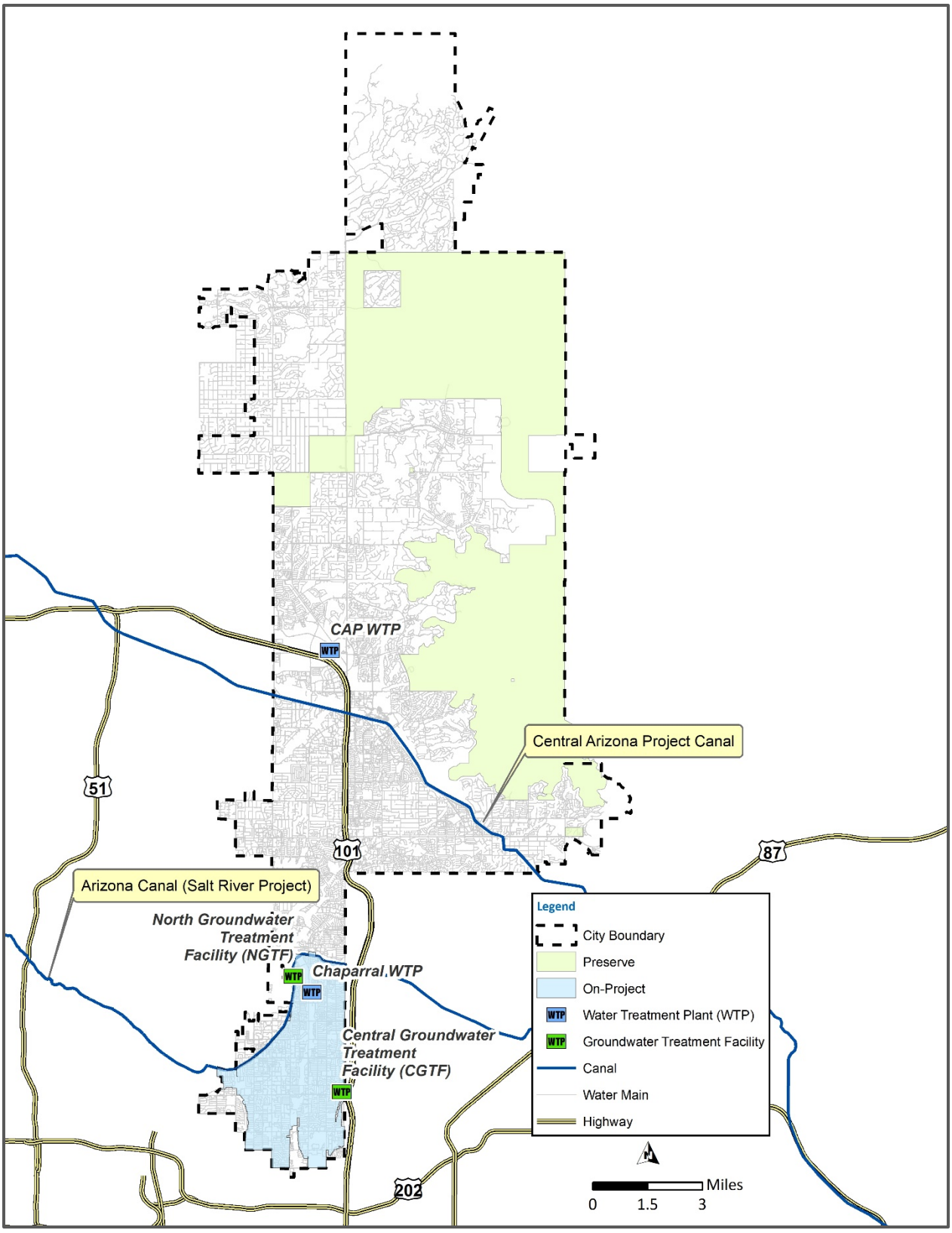

FIGURE 1 - SCOTTDALE'S WATER SERVICE AREA

Colorado River Water Supply

The Colorado River basin is divided into two basins, the upper and lower. The Upper Basin includes the states of Colorado, New Mexico, Utah and Wyoming. The Lower Basin includes Arizona, California and Nevada (Figure 2). Lake Powell (located in Arizona and Utah), is the second largest reservoir on the Colorado River and releases water into the largest Colorado River reservoir, Lake Mead (located along the Arizona/Nevada border). The water level elevation of Lake Mead is used to determine when shortages are declared for the Lower Basin states. The operation of Lake Powell and Lake Mead are controlled by the U.S. Bureau of Reclamation (BOR). Central and southern Arizona receive their apportionments of Colorado River water from Lake Havasu, which is transported via the CAP aqueduct (a 336-mile conveyance system comprised of a canal, pump stations and pipelines).

Colorado River water is Scottsdale's largest renewable surface water supply. Scottsdale's allocation of Colorado River water is delivered through the CAP canal to Scottsdale's CAP Water Treatment Plant. It is then treated to drinking water standards and delivered to water customers through water distribution lines located throughout the city. Scottsdale has access to 81,216 AF of CAP water annually, which is approximately 65-70 percent of its total water supply. This annual access volume includes Scottsdale's 52,810 AF municipal allocation and 28,406 AF in other assignments and tribal lease agreements.

FIGURE 2 - COLORADO RIVER BASIN

Salt River Project Water Supply

SRP water supplies originate from the Salt and Verde River watersheds (Figure 3). These systems are fed from precipitation and snowpack located in the northeastern and central areas of Arizona. SRP's available surface water supplies vary from year to year and are dependent upon annual snowpack and spring runoff.

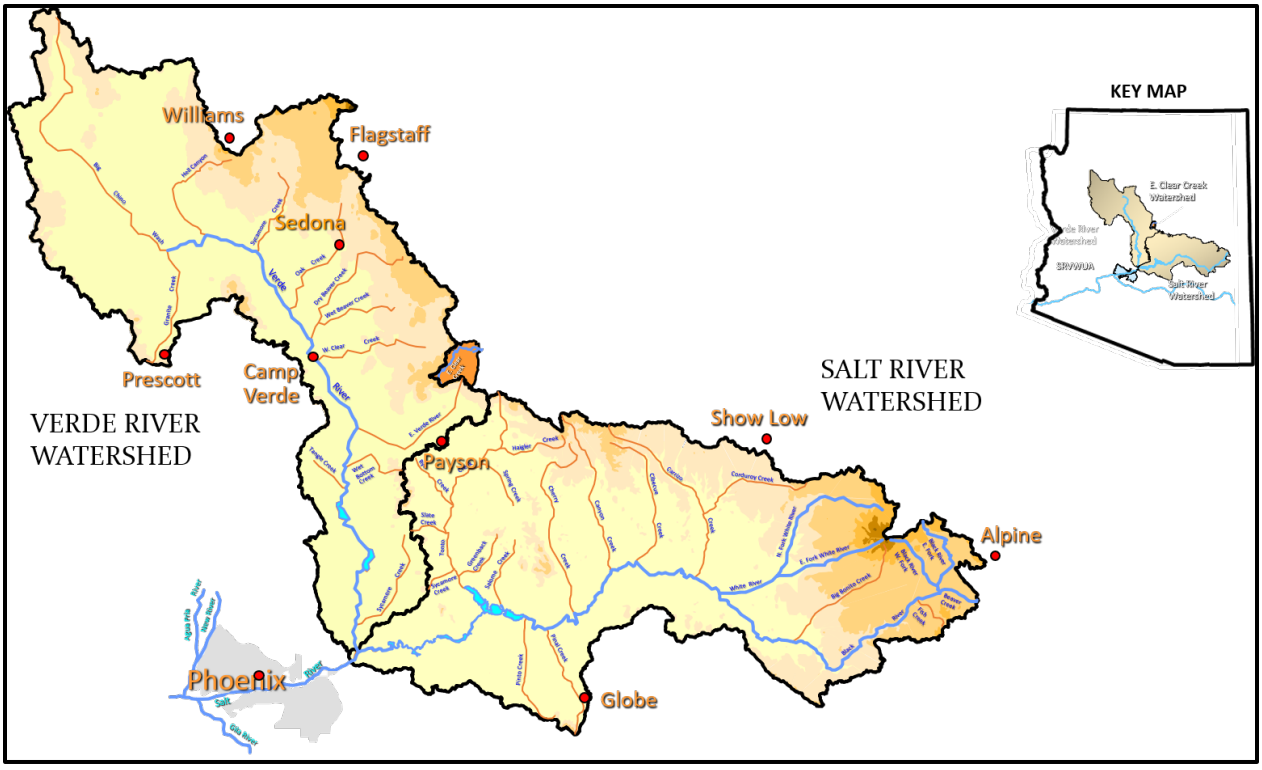

FIGURE 3 - SALT RIVER PROJECT WATERSHED

SRP surface water is stored in a series of reservoirs and delivered to Scottsdale through SRP's canals (Figure 4) to Scottsdale's Chaparral Water Treatment Plant. SRP's water supply also consists of an allocation of groundwater pumped from wells owned by SRP and located on SRP lands.

SRP supplies are appurtenant to the land, meaning the water can only be used to serve customers within the SRP service area (referred to as "On-Project" lands). SRP lands are located in the southern most section of Scottsdale's service area. During normal water supply years, Scottsdale's SRP lands – 6,095 acres – are entitled to a total of 3.0 AF per acre of land, equating to 18,285 AF/year. The 3.0 AF/acre allocation includes both surface water and groundwater. The amount of each source changes year to year and is determined by SRP reservoir levels and projected hydrology in the watershed. Scottsdale's average On-Project water demand is approximately 2.5 AF/acre, or 15,238 AF/year. In a year when the surface water allocation is lower than 2.5 AF/acre, SRP pumps groundwater from its wells and transports it through the canal system for delivery to the Chaparral Water Treatment Plant, thereby offsetting a portion

of a surface water deficiency on the SRP system and providing Scottsdale's required On-Project supply.

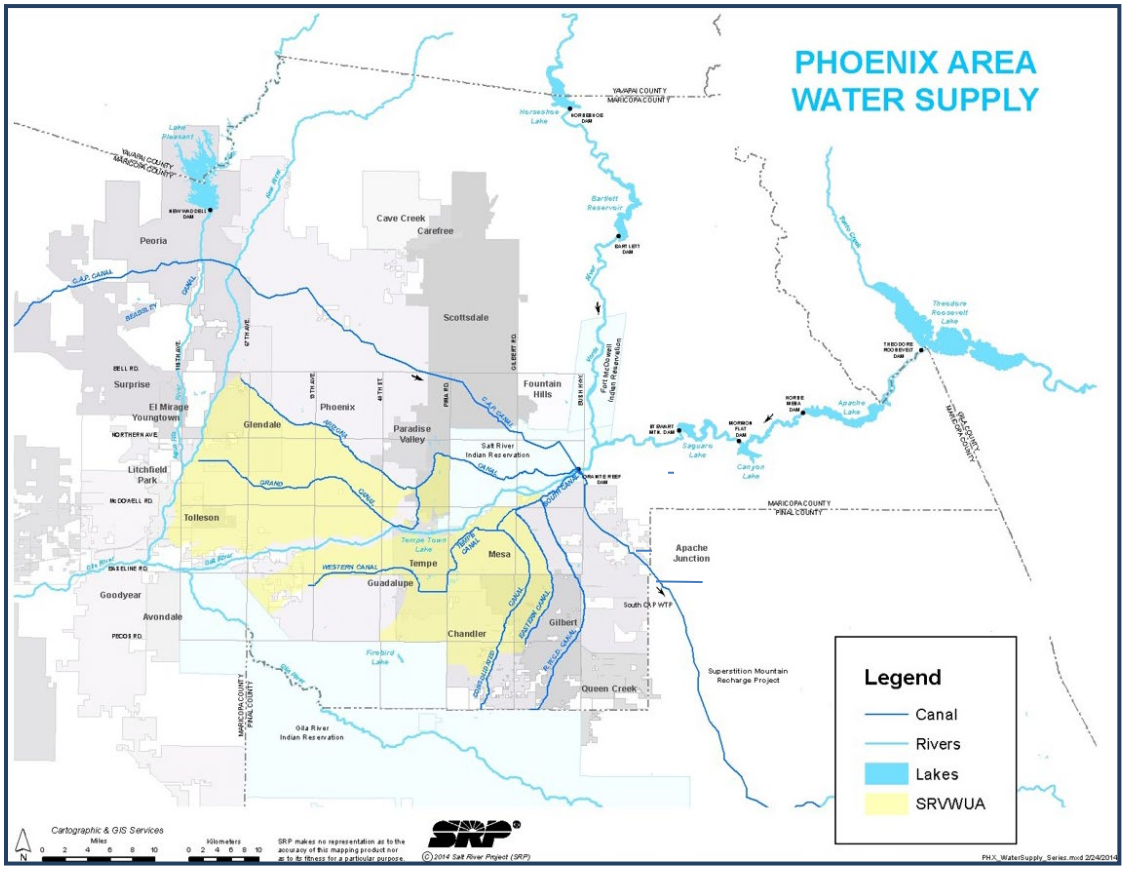

FIGURE 4 - SRP CANAL DELIVERY SYSTEMS

Groundwater

The ADWR regulates water use in the state through the Groundwater Code, including delineation of five Active Management Areas (AMA). The AMAs are areas of the state identified in the 1980 Groundwater Management Act as having the most serious trends of groundwater overdraft and continued potential for increased overdraft due to large existing and projected population centers. Scottsdale is located within the Phoenix AMA, where the ADWR has established a goal of "Safe Yield" by year 2025. Safe Yield refers to the concept of balancing the amount of water pumped from the aquifer with the amount of water recharged into the aquifer.

Scottsdale meets the majority of its customers' water demands with surface water. Scottsdale also utilizes groundwater for operational performance to meet peak demand and for other operations issues. Groundwater utilization represents approximately 5 to 10 percent of the total water delivered to meet demands under normal conditions. However, during times of drought and/or a supply shortage declaration, Scottsdale may need to increase groundwater production. Due to the regulatory framework of how groundwater is managed in Arizona,

increased groundwater pumping would mean recovery of groundwater recharge credits. These credits are created from renewable supplies previously recharged into the aquifer for which Scottsdale received Long Term Storage Credits. Although Scottsdale has groundwater credits to recover in times of drought/shortage and has built the infrastructure to deliver this water to customers, it is inherent in the planning process to be prudent with recovery of non-renewable stored supplies. It is for this reason demand management in times of increasing shortage is a part of the toolbox for managing prolonged shortage for a resilient water supply.

Recycled Water Supply

Recycled water is an important component in Scottsdale's water resources portfolio. Planning for the use of recycled water in Scottsdale is accomplished within the framework of integrated water resource management with a focus on meeting irrigation demands, maintaining Safe Yield and maximizing recharge opportunities. Scottsdale has implemented strategic efforts in order to maximize its ability to locally recharge and utilize recycled water. After treatment, recycled water is either used for turf irrigation or recharged into the ground through wells into the aquifer. Recharging recycled water increases the amount of groundwater below the city's service area, which can then be pumped back out during surface water supply shortages.

Water Demand

The City of Scottsdale has several different customer types, which all utilize water to add value to the city's economy and way of life. The majority of Scottsdale's customers fall into the residential class of either Single Family Residence (SFR) or Multi-Family Residence (MFR). These customers represent approximately 65 percent of the city's total water demand. Commercial, industrial, government, construction and other metered users represent approximately 19 percent of total water demand. Turf Irrigation represents the remaining 16 percent of Scottsdale's total water demand. Customer use trends are important to understand when developing demand management strategies and identifying the tools that can be utilized in a water shortage scenario.

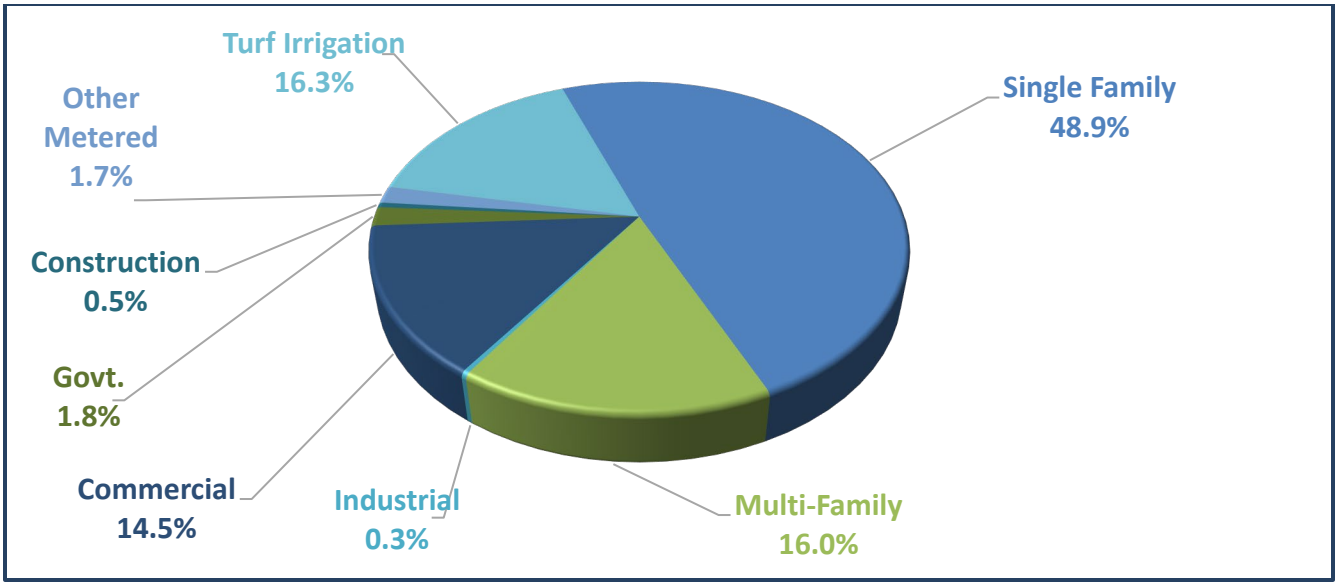

FIGURE 5 - 2019 DEMAND CLASSIFICATION PROFILE

Water demand projections for Scottsdale's water service area have been developed for the Integrated Water Resources Master Plan (IWRMP), which is being updated in 2021. The IWRMP growth projections are based on both Maricopa Association of Governments (MAG) data and Scottsdale's zoning classifications and current parcel-based water demand data for those classifications. Unit water demands were calculated using Scottsdale's customer billing data and zoning classifications to define average annual water demands on a per acre basis (gallons per acre per day [gpad]). This was used to project water demand into the future for five-year incremental planning periods through year 2055. Table 2 below summarizes the water demand projections through year 2025, which is the five-year planning period this document covers. The projections in Table 2 include both potable and non-potable water demands.

TABLE 2 - DEMAND PROJECTIONS 2020 & 2025

	2020	2025
Total (AF)	89,200	90,900
Total (MGD)	79.6	81.2

Drought Management Team

An effective DMP includes establishing a team to manage and oversee the city's response to water shortage. The Drought Management Team (DMT) will be established at any stage where Scottsdale water supplies are reduced for a period of more than eight weeks. The DMT's responsibilities will include evaluating the severity of the shortage and providing oversight of the action plan based upon the projected impacts to the city. A primary goal of the DMT's activities will be to ensure that clear communication and outreach between the city and its customers is achieved throughout the duration of a shortage episode.

The DMT will be activated and led by the Water Resources Executive Director and be comprised of key members of the Water Resources Division's staff, along with representatives from Public Works, Community Services, the City Attorney's office, Finance, Business Services, Communications and other city departments as appropriate. At a minimum, the DMT should include:

- Scottsdale Water Executive Director
- Water Policy Manager
- Water Resources Administrator or Water Services Director
- Water Public Information Officer
- Facilities Director (or designee)
- Parks Director (or designee)
- Business Services Director (or designee)
- Enterprise Finance Director (or designee)
- Communications Director (or designee)
- City Attorney (or designee)

The responsibility of the DMT is to evaluate the current water supply status, water demands, water supply projections and other shortage-related scenarios and report their findings and recommendations to the City Manager. The DMT will be responsible for determining the appropriate stage and response levels for the city (see Demand Side Management Strategies and Responses section). The Demand Side Management Options Menu at the end of this document will guide the DMT in choosing water reduction options that are appropriate to the level of the water supply shortage. The DMT will also determine the appropriate time to designate a different stage and/or resume normal conditions of supply and system usage. Scottsdale Water's Public Information Officer (PIO) will lead the development and implementation of a Public Information Water Shortage education campaign.

The DMT may also recommend to the City Manager that the implementation of a shortage surcharge should be part of the response based on the severity of the shortage. The surcharge would provide pricing signals to Scottsdale Water's customers and increase their awareness of the shortage severity. It may also assist in meeting water use reduction targets and help maintain Scottsdale's financial health. The potential surcharge is different from the regular rate structure in that it would be temporary in nature and could only be implemented with City Council approval. The DMT will include the definition of the criteria for implementing and removing the surcharge in their recommendations to the City Manager.

Water Supply Shortage and Stages

This DMP outlines five water supply Shortage Stages that may be the result of regional water supply reductions impacting the CAP and/or SRP water supplies or the interruption of supply due to other circumstances outside the city's control. Table 3 summarizes the city's water shortage stage definitions and the associated potential supply reductions. Each stage reflects a progressively deeper shortage measured by a reduction in Scottsdale's water supply, with corresponding stricter water use responses. Stages Zero and 1 may be declared and authorized by the City Manager. Stages 2, 3 and 4 must be declared and authorized by the City Council. The PIO will implement the public education campaign to alert the community of a shortage declaration.

TABLE 3 - CITY WATER SHORTAGE STAGES AND SUPPLY REDUCTIONS

Stage Number	Stage	Supply Reduction (MGD)	Supply Reduction (AF)
Zero	Water Shortage Preparation	Zero to 1	Zero to 1,100
1	Minimum Water Shortage	1 to 6	1,100 to 6,700
2	Moderate Water Shortage	6 to 13	6,700 to 14,600
3	Severe Water Shortage	13 to 23	14,600 to 25,800
4	Critical Water Shortage	>24	> 27,000

Water Supply Shortage

The southwestern United States has been experiencing below average precipitation for nearly two decades, impacting surface water supplies throughout the region. A shortage in Scottsdale's water supply (whether CAP or SRP or both) is measured in a MGD reduction to the surface water supply. Due to the differences in the two supplies, a shortage in each system will be addressed separately. Additional details regarding water supply shortages can be found in each of the Demand Side Management Strategies and Responses sections.

Colorado River Shortage

The BOR studies the Colorado River conditions year-round and publishes its findings in regular reports. The most important document is the annual report (August 24-month study) as these findings direct the next year's potential shortage declaration on the Colorado River System. The Colorado River has been monitored and evaluated extensively and recent studies indicate the possibility for reduced CAP water deliveries within the next five years.

State of Arizona Drought Contingency Plan

Due to the duration of the ongoing drought in the western United States, and in anticipation of additional future droughts, the State of Arizona (in partnership with the other Lower Basin states) developed the Lower Basin Drought Contingency Plan (DCP), which was adopted by the U.S. Congress in April 2019. The DCP was implemented in order to facilitate shortage declarations on Lake Mead caused by a reduction in flows of the Colorado River. The DCP is based upon the elevation levels of Lake Mead in feet above sea level and includes six elevation tiers, each with a corresponding reduction in Colorado River deliveries to the State of Arizona. The DMP reflects the strategy developed through the DCP with regard to reductions to those that have contracts, subcontracts, or agreements for water and therefore are entitlement holders (right to divert and/or consumptively use) and the impact of shortage-related cuts to Scottsdale's Colorado River water supply. Scottsdale has a CAP subcontract and is a party to other lease agreements and has a combined entitlement of up to 81,271 AF of Colorado River water.

The correlation of these cuts to the state DCP and the city's DMP are addressed in the Stages and Response section. Table 4 below demonstrates the relationship among Lake Mead elevations, the CAP Water Shortage Tiers and the reductions in water deliveries to Arizona. Table 5 identifies Scottsdale's potential shortage stages resulting from a reduction of CAP water to the city for each CAP Water Shortage Tier.[1]

TABLE 4 - DCP WATER SHORTAGE TIERS IMPACTING THE STATE OF ARIZONA

CAP Water Shortage Tiers	TIER ZERO	TIER 1	TIER 2A	TIER 2B	TIER 3	PROTECT LEVEL[2]
Lake Mead Elevation above mean sea level (in feet)	1,090	1,075	1,050	1,045	1,025	<1,025
Reductions in Water Delivery to Arizona (in AF)	192,000	512,000	592,000	640,000	720,000	Secretary of the Interior can intervene

[1] It is important to note that quantification of reductions are potential reductions based on assumptions and current level of water orders from contract and agreement holders. These assumptions and estimates are subject to change.

[2] Protection Level is not a true tier to the structure but is included as at this level the United States Secretary of the Interior has the authority to reduce deliveries by any amount to all water users to protect Lake Mead and the system.

TABLE 5 - CAP WATER SHORTAGE TIERS & SCOTTSDALE'S CORRESPONDING SHORTAGE STAGES

CAP Water Shortage Tiers	TIER ZERO	TIER 1	TIER 2A	TIER 2B	TIER 3	PROTECT LEVEL
Lake Mead Elevation (in feet)	1,090	1,075	1,050	1,045	1,025	<1,025
Corresponding City Water Shortage Stage	Stage Zero Shortage Preparation	Stage 1 Minimum Shortage	Stage 1 Minimum Shortage	Stage 2 Moderate Shortage	Stage 3 Severe Shortage	Stage 4 Critical Shortage
Potential City Water Supply Reduction (MGD)[3]	0	2.0	3.0	6.5	13.5	24
Potential City Water Supply Reduction (AF/year)	0	2,300	3,400	7,300	15,200	26,900

SRP Water Supply Shortage

A shortage of the SRP supply would be indicated by a reduction in the annual AF per acre allocation. As previously detailed, under normal supply conditions, Scottsdale's SRP lands (6,095 acres) are entitled up to a 3.0 AF/acre allocation, (a total of 18,285 AF per year), including both surface water and groundwater. A shortage in the SRP water supply will impact only the SRP lands within Scottsdale's service area. If there is no accompanying shortage in the CAP supply, unused CAP water may be available to make up for a portion of the reduction of the SRP surface water supply. Table 6 summarizes the estimated SRP supply reductions associated with Scottsdale's water shortage stages.

[3] Shortage reductions are based on water right priority and total volumes ordered in each priority pool. The tabulated values are estimates for planning purposes based on generally acknowledged potential reductions.

TABLE 6 - SRP WATER SHORTAGE AND SCOTTSDALE'S CORRESPONDING SHORTAGE STAGES

City Water Shortage Stage	Stage Zero Shortage Preparation	Stage 1 Minimum Shortage	Stage 2 Moderate Shortage	Stage 3 Severe Shortage	Stage 4 Critical Shortage
Potential City Water Supply Reduction (MGD)	0	6.0	11	16.3*	N/A
Potential City Water Supply Reduction (AF/year)	0	6,700	12,300	18,300	N/A

*maximum SRP surface and groundwater supply available based on a 3 AF/acre maximum multiplier

Demand Side Management Strategy and Responses

Demand management can potentially mitigate supply shortfalls by asking customers to temporarily change their water usage, thereby reducing the amount of water needed to serve the community. The DMP includes a Demand Side Management Options Menu (Menu) to be utilized during water supply shortages to assist the city in efforts to reduce water use. The Menu lists options for outreach and water savings responses (both voluntary and enforced) based upon customer class: Municipal, Residential and Nonresidential. The Menu options are listed by Shortage Stage. For example, in Stage Zero, the majority of the options are based on increased customer notification and outreach strategies. As the Shortage Stages become more severe, the Menu options move from voluntary to enforced and include prohibitions for water use in the most severe stages.

Upon a shortage declaration, the Municipal response options will be the first to be activated as it is important to send our residents a message that city facilities and operations will be leading the effort to reduce water use. All the demand management response options on the Menu involve water conservation and additional customer outreach efforts. Scottsdale also has a water conservation ordinance that includes water conservation rebate programs, limitations on water intensive landscaping and restrictions on water waste from irrigation systems. The ordinance provides measures for city staff to issue warnings and fines for water waste violations.

Stage 0 – Water Shortage Preparation Stage: Supply Reduction is Zero[4]

This stage corresponds with the CAP Tier Zero and SRP Stage Zero scenarios, where there is no reduction in Scottsdale's CAP or SRP water supply. Regional water suppliers may be experiencing the effects of extended dry weather conditions, and Scottsdale and other local municipalities may be preparing to respond to a potential reduction in future water deliveries. During this stage, Scottsdale will continue to educate and encourage customers to use water efficiently through the Water Conservation Office and additional educational opportunities. Water Conservation will focus on Best Management Practices to ensure water use efficiency throughout city facilities, with an emphasis on buildings, parks and the aquatics facilities. The Scottsdale Water Executive Director may activate the DMT in this stage.

Stage 1 – Minimum Water Shortage Stage; Supply Reduction up to 6 MGD[4]

This stage corresponds with CAP's DCP Shortage Tiers 1 and 2A, with an estimated shortage on the CAP system of up to 6 MGD of Scottsdale's CAP water supply and/or an SRP Stage 1 shortage. An SRP Stage 1 can be triggered any time the surface water allocation is reduced to any point between 1.9 AF/acre and 1.1 AF/acre depending on water supply conditions and is to be determined by the DMT. The Water Resources Executive Director will activate the DMT at this stage.

Stage 1 is characterized by increased monitoring and evaluation activities related to the shortage episode. The DMT will track water supply projections from the major surface water providers. Customer water usage and its corresponding revenue generated will be compared to normal use. The DMT will increase public outreach and recommend specific water use restrictions to the City Manager, depending on conditions.

Scottsdale's commercial and residential fill station shall be shut down or restricted at this stage. Any water hauling operations will cease unless the water hauling customer, whether residential or commercial, can prove indisputably that the hauled water is being supplied directly to a City of Scottsdale resident or business.

Stage 2 – Moderate Water Shortage; Supply Reduction 6 to 13 MGD[5]

DMP Stage 2 corresponds with CAP's DCP shortage Tier 2B, with a shortage of up to 13 MGD of Scottsdale's CAP water supply. On the SRP system, Stage 2 shortage corresponds with a reduction of up to 11 MGD of SRP surface water supply (approximately equivalent to a surface water allocation below 1.0 AF/acre). This stage is characterized by increased monitoring and evaluation activities related to the shortage episode. Any restrictions or surcharges imposed under Stage 1 will continue. The DMT will track water supply projections from the major

[4] Authorized by City Manager

[5] Authorized by City Council

surface water providers. Customer water usage and its corresponding revenue generation will be compared to normal use, and at this stage the DMT may recommend increased water use restrictions and mandatory water conservation to the City Manager. The DMT will evaluate the need to impose a water shortage surcharge on one or more of the customer sectors and potential additional mandatory water use restrictions on water customers[6]. Public outreach will increase, and the DMT may recommend more specific water use restrictions depending on conditions.

Stage 3 – Severe Water Shortage; Supply Reduction 13 to 24 MGD[7]

DMP Stage 3 corresponds with the DCP shortage Tier 3, with a shortage of up to 23 MGD of Scottsdale's CAP water supply. There is no SRP trigger for this level as SRP's annual allocation is meant to curtail any severe drop in lake levels on the SRP reservoir system when surface water allocations drop below 1.0 AF/acre.

Any Scottsdale DMP restrictions or surcharges imposed under Stage 2 will continue. The DMT will evaluate the need to impose or increase the water shortage surcharge and implement additional mandatory water use restrictions on Scottsdale Water customers. Recommendations will be made to the City Manager. Due to public communication efforts, customers should anticipate and understand that an increased level of water conservation and potential restrictions are appropriate.

Stage 4 – Critical Water Shortage; Supply Reduction of >24 MGD[8]

Scottsdale DMP Stage 4 corresponds with the state's DCP shortage Protect Level Tier, with a potential shortage of greater than 24 MGD of Scottsdale's CAP water supply. The level of Lake Mead at this point will trigger the U.S. Secretary of the Interior to have the ability to take control of the release of water from Lake Mead once the elevation falls below 1,025 feet in elevation above mean sea level. Releases from Lake Mead are physically possible down to an elevation of 925 feet above mean sea level, and it is unknown how the Secretary will operate Lake Mead at this level.

During this stage, the DMT will evaluate the potential for substantially reducing water use through structured mandatory water use restrictions. Discretionary uses of water by customers may be eliminated and the public awareness efforts of the critical level of the shortage will be heightened. During this stage, the primary focus of the DMT response will be to maintain the health, safety and economic vitality of the community to the maximum extent possible. Any restrictions or surcharges imposed under Stage 3 will continue. Substantial and mandatory curtailment of outdoor water use may be prescribed. Accurate, clear and consistent messaging

[6] A rate surcharge or water restrictions on residential or commercial customers will require Council approval
[7] Authorized by City Council
[8] Authorized by City Council

from the DMT will be important to instill water customer confidence. An increase in water supply shortage surcharges may be warranted.

Water Shortage Profiles

Scottsdale receives approximately 60 percent of its water supply from the CAP and approximately 15 percent from the SRP, which can only be used On-Project lands. Therefore, a shortage in the CAP water supply would have a far greater impact on Scottsdale than a shortage in its SRP supply. If there is no shortage in the CAP supply during an SRP water supply shortage, offsetting some or all of the SRP supply shortage with unused CAP supply is a possible option (depending upon operational constraints). Water shortages in the CAP and SRP supplies are demonstrated separately, as CAP shortages are triggered by BOR-declared Lake Mead elevation Tier shortages, and SRP shortages are triggered by City-defined Stage shortages.

CAP Water Shortage Profile

The figures below demonstrate the estimated water demand in relation to the renewable water supplies during shortages in the CAP water supply for the years 2020 and 2025. Both the demand and the supply are shown in AF/year.

Scottsdale's Shortages Stages in the CAP supply are demonstrated as BOR declared Tier Shortages, on the CAP Stages (see the Water Supply Reduction section). Figure 6 and Figure 7 show how each tier reduction narrows the band between that year's demand and the available renewable supplies. For the years 2020 and 2025, it is estimated that there will be available renewable supplies through Tier 3. However, it is still imperative to understand that each tier declaration is a reduction in supply to the State of Arizona, and continued stewardship and conservation is an effort to keep our supplies resilient now and into the future.

It is important to note that these scenarios are snap shots in time of a single year and do not represent the length of time a shortage will last. For long-term planning purposes, these shortages are assumed to last multiple years. In normal years Scottsdale's excess CAP supply is recharged into the ground to be able to be withdrawn in times of shortage. Nevertheless, demand management during a shortage declaration is an important and purposeful tool to manage water supply and provides Scottsdale with the ability to utilize several options to effectively serve the citizens of the community in times of prolonged shortage. Prolonged reduction beyond 2025 are outside of the scope of this document but could impact supplies in future years.

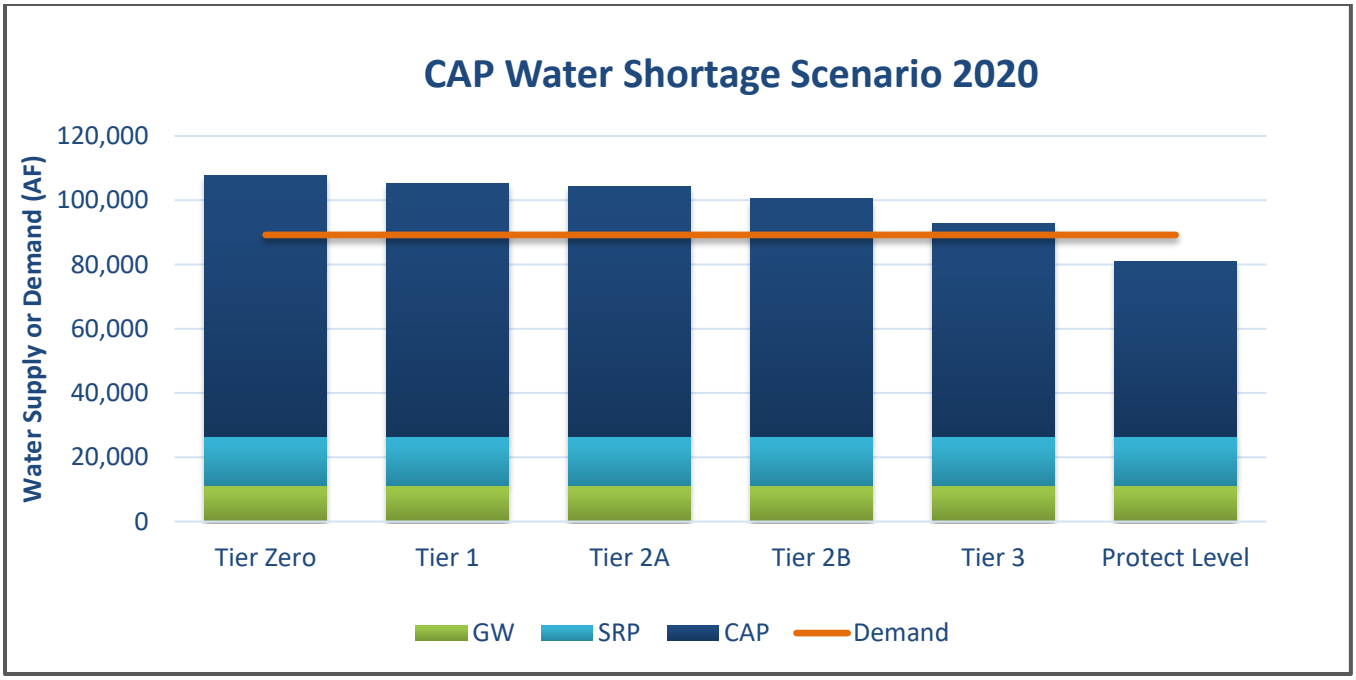

FIGURE 6 - YEAR 2020 CAP WATER SHORTAGE[9]

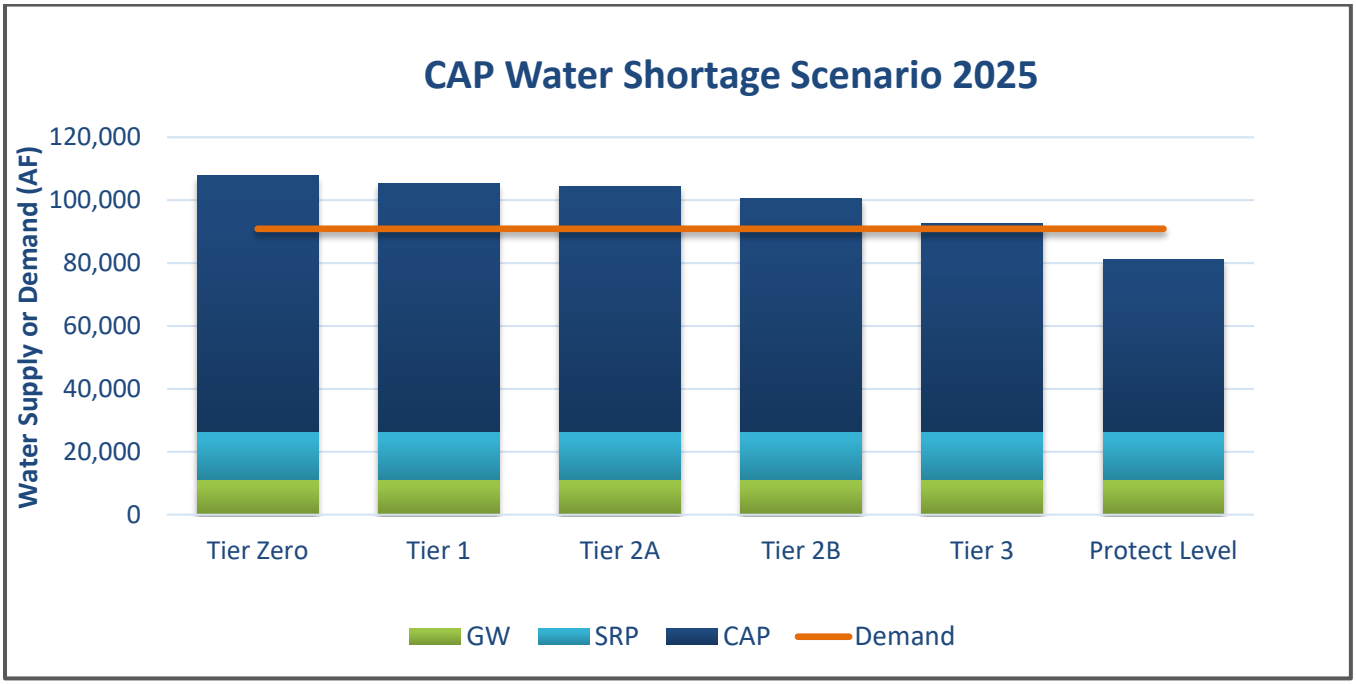

FIGURE 7 - YEAR 2025 CAP WATER SHORTAGE

[9] For both Figure 6 and Figure 7, groundwater includes incidental recharge and remediation exemption. The SRP supply assume a surface water allocation of 2.5 AF/acre.

SRP Water Shortage Profile

The shortage in the SRP water supply impacts the total water supply in Stages 1, 2 and 3.

- Stage 1 corresponds to a reduction in a surface water allocation of between 1.9 and 1.1 AF/acre.
- Stage 2 corresponds to surface water allocation between 1.0 AF/acre or less.
- Stage 3 complete loss of SRP surface water supply

The watersheds that supply the SRP reservoir systems are more variable and governed differently than the CAP system. The trigger for drought stages are determined by the DMT, with consideration for supply conditions. Figure 8 demonstrates that Scottsdale's supplies up to 2025 are adequate to meet demands for all Stages. However, reduction in SRP supplies are made up with additional CAP supply, and again continued stewardship and conservation efforts keep our supplies resilient now and for future needs.

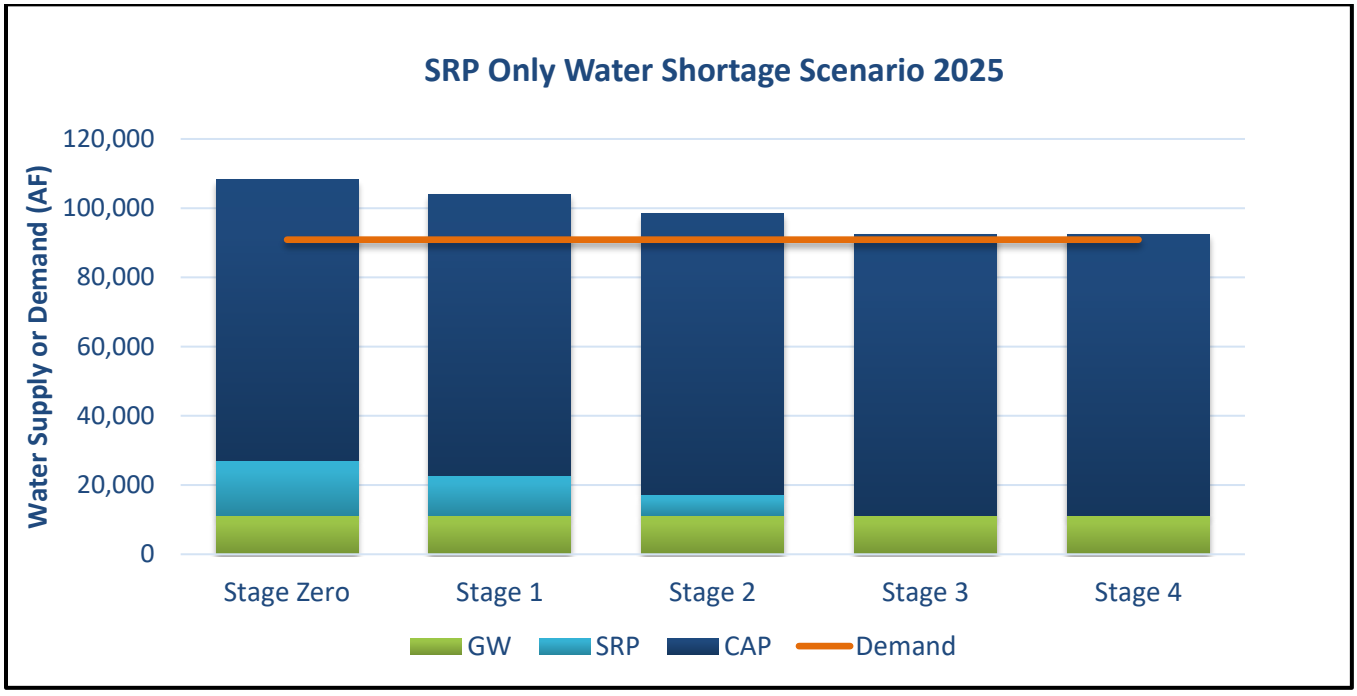

FIGURE 8 - SRP WATER SUPPLY SHORTAGE STAGES

Demand Management Toolbox

The Demand Side Management Option Menus below are meant to guide the DMT in choosing water reduction options that are appropriate to the level of the water supply shortage. The DMT may choose any number of items from the tables as they seem fit to guide municipal, residential, and non-residential customers in reducing water consumption. The DMT may also find additional options outside of this menu that further reduce water usage as applicable to the needs of the city.

TABLE 7 - MUNICIPAL DEMAND SIDE MANAGEMENT OPTION MENU

		Response Options	Stage Zero	Stage 1	Stage 2	Stage 3	Stage 4
Municipal	A	Reduce/eliminate irrigation for municipal landscaping		Reduce	Limit	limit	No turf irrigation
	B	Limit/Prohibit over-seeding for a winter lawn		Limit	Prohibit	Prohibit	Prohibit
	C	Educate municipal staff on indoor/outdoor water-saving techniques	Initiate	Expand	Continue	Continue	Continue
	D	Limit/prohibit washing of municipal fleet vehicles		Reduce	Limit	Prohibit	Prohibit
	E	Limit hydrant flushing		Limit	Limit	N/A (See G)	N/A (See G)
	F	Limit use of water for fire training		Limit	Limit	N/A (See G)	N/A (See G)
	G	Eliminate all fire hydrant uses except those required for public safety				Initiate	Continue
	H	Reduce / Turn off municipally owned ornamental fountains		Initiate	Expand	Continue	Continue
	I	Conduct indoor water audits	Initiate	Continue	Continue	Continue	Continue
	J	Public water shortage education campaign	Initiate	Expand	Intensify	Intensify	Intensify
	K	Close water hauling station to all non-Scottsdale residents and businesses		Initiate	Continue	Continue	Continue

TABLE 8 - RESIDENTIAL DEMAND SIDE MANAGEMENT OPTION MENU

		Response Options	Stage Zero	Stage 1	Stage 2	Stage 3	Stage 4
Residential	A	Enforce landscape watering restrictions			Initiate	Continue	Continue
	B	Limit/Prohibit over-seeding for a winter lawn		Promote	limit	Prohibit	Prohibit
	C	Limit maximum number of watering days per week and the duration of watering time			3 days/week (odd/even)	2 days/week (odd/even)	No turf irrigation
	D	Limit/prohibit new sod, seeding, and/or other landscaping			promote	Limit	Prohibit
	E	Enforce restrictions on spraying of impervious surfaces		Initiate	Continue	Continue	Continue
	F	Prohibit vehicle washing			Limit	Limit	Prohibit
	G	Limit/Prohibit use of ornamental fountains		Limit	Continue	Continue	Prohibit
	H	Promote conservation with operation and maintenance of swimming pools	Increase	Continue	Continue	Continue	Continue
	I	Educate customers on indoor/outdoor water saving techniques	Increase	Continue	Continue	Continue	Continue
	J	Promote reduction of evaporative coolers use		Initiate	Continue	Continue	Continue

TABLE 9 - NONRESIDENTIAL DEMAND SIDE MANAGEMENT OPTION MENU

		Response Options	Stage Zero	Stage 1	Stage 2	Stage 3	Stage 4
Commercial / Non-Residential	A	Enforce/prohibit use of construction water	Enforce permits	Enforce permits	Enforce permits	Prohibit	Prohibit
	B	Prohibit Commercial Water Haulers	Notify	Prohibit	Prohibit	Prohibit	Prohibit
	C	Implement policy guidelines /limitations for installation of new sod and/or other landscaping		Initiate	limit	Continue	Continue
	D	Implement landscape watering restrictions		Initiate	Continue	Continue	Continue
	E	Limit/prohibit over-seeding for a winter lawn			Prohibit	Prohibit	Prohibit
	F	Limit maximum number of watering days per week and the duration			3 days/week (odd/even)	2 days/week (odd/even)	No turf irrigation
	G	Intensify Promote /require indoor and outdoor water audits	initiate	Promote	Promote	Require	Require
	H	Reduce / Prohibit use of all ornamental fountains		Reduce	Limit	Continue	Continue
	I	Promote conservation with operation and maintenance of swimming pools	Increase	Continue	Continue	Continue	Continue
	J	Educate customers on water saving techniques	Increase	Continue	Continue	Continue	Continue
	K	Limit/prohibit dealership washing of vehicles		Limit	Limit	Prohibit	Prohibit
	L	Enforce water use restrictions on commercial car washes		No Water Waste	No Water Waste	Prohibit	Prohibit
	M	Promote limiting service of water in restaurants when not requested	Promote	Reduce	Limit	Prohibit	Continue