

Water Shortage Management Plan 2018



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INTRODUCTION

A water shortage can occur when a source of water supply is reduced to a level that is unable to support existing demands. Natural forces (drought), system component failure or interruption, increased customer demand, or regulatory actions may cause water shortages. Drought is the most common cause of water shortage and can occur when there are several consecutive years of below normal/average precipitation on the watershed resulting in reduced stream flows and reservoirs levels. Mesa has planned for these drier years by securing and managing a variety of water sources and encouraging voluntary water conservation. Because water shortage causes are varied and sometimes unpredictable, preparation for a water shortage is an ongoing effort.

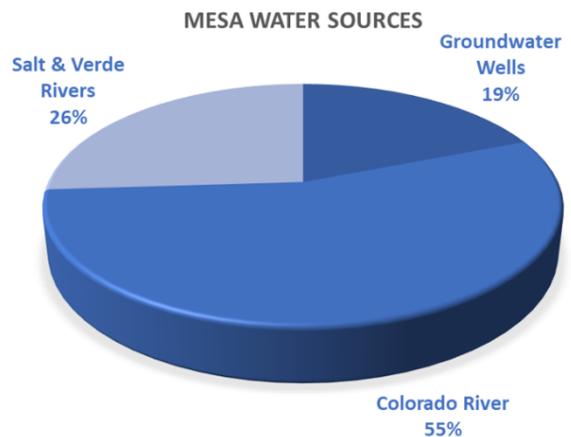
The City of Mesa Water Shortage Management Plan complements ongoing water resource and water master planning efforts. The Plan is designed to be a flexible tool to plan for, mitigate, and respond to water shortage conditions, and to keep the public informed regarding impacts.

The purpose of this Water Shortage Management Plan is to endorse a management framework for:

- addressing shortage conditions when they occur;
- preventing the need to implement drastic demand reduction measures, such as rationing of water supplies; and
- planning for future shortage conditions before they occur.

WATER SOURCES & SUPPLY

Mesa is fortunate to have multiple water sources. Most of Mesa’s water supply is surface water from the Colorado River delivered through the Central Arizona Project (CAP), as well from the Salt and Verde Rivers delivered by the Salt River Project (SRP). Mesa also receives a significant amount of water through an effluent exchange with the Gila River Indian Community (GRIC). Mesa delivers highly treated wastewater to the GRIC and receives 80% of that water returned as raw CAP water. When additional water is needed, groundwater and surface water that has been stored underground is pumped from many wells located throughout the city.



Mesa captures wastewater and treats it to a very high standard, then allows it to percolate back into the ground where it is stored for future use. Mesa also stores surplus surface water underground. These sources combined replenish groundwater supplies and allow Mesa to accumulate long-term storage credits.

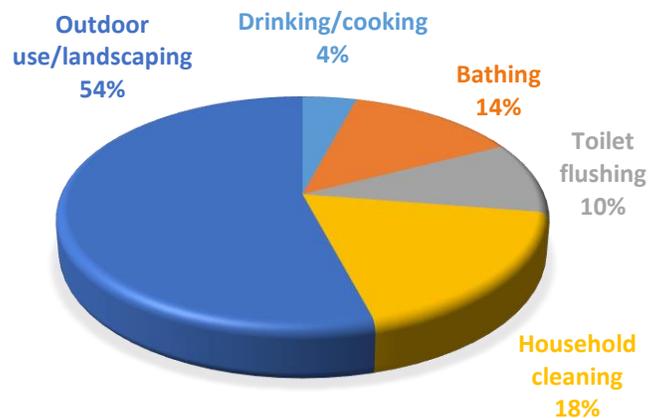
Mesa has amassed over 485,000 acre-feet of long-term storage credits and continues to build that credit for meeting water demand during a shortage and to demonstrate that the City has a 100-year assured water supply.

From an operations perspective, ultimate preparation comes from having adequate well capacity to meet water demand when surface water supplies are short. Mesa has worked for years to successfully maintain the well capacity needed to meet customer demand during times when surface water supplies or water treatment capacities are limited in availability.

CONSERVATION

Since 1982, Mesa has promoted and encourages voluntary water conservation, regardless of the amount of water available. However, if water shortage conditions prevail for an extended period of time, it may be necessary to initiate water use restrictions.

Another benefit to conservation during times of shortage is one associated with cost. For example, a water shortage potentially can cause an increase in the cost of meeting customers' demands. When SRP water supplies are short, they may be supplemented with more expensive CAP water. Demand can be managed during these times first to prevent the need to ration water supplies, but also to mitigate the impact of increased costs of water supplies.



AVERAGE MESA HOUSEHOLD CONSUMPTION

WATER SHORTAGE MANAGEMENT PLAN

The Water Shortage Management Team is comprised of City of Mesa employees who have expertise in water supply monitoring and management, water quality, conservation, communications, fiscal analysis, and law. This team has been tasked with developing the Water Shortage Management Plan, as well as recommending implementation of the plan, if needed. Members of the Team shall include at a minimum:

WATER SHORTAGE MANAGEMENT PLAN



The Water Resources Advisor will monitor water supply conditions on an ongoing basis and send out information regarding the condition of relevant watersheds to members of the Team. When a shortage occurs or is imminent, upon recommendation of the Water Resources Director, the City Manager, or designee, may activate the Team.

The Team will evaluate the severity of the shortage and develop an action plan based on current and forecasted water supply and demand, and economic impact to the City and community.

Impacts will vary depending on the severity and length of the shortage. Factors typically used to evaluate the impact of a shortage include the availability of current and projected water supplies, current and projected customer demands, the availability of current and future water supply infrastructure, the condition of surface water reservoirs, and projections from climatologists regarding the magnitude and duration of the shortage. The Team will use these factors to evaluate the best-case, worst-case, and most-likely scenarios regarding the severity and length of the shortage.

After undertaking such analysis, the Water Resources Department Director shall report the Team's findings back to the City Manager. The Team shall present the following:

- An analysis of the probable impact to City of Mesa water supplies.
- An analysis of the probable financial impacts of the shortage.
- An analysis of the potential need for availability of alternative water supplies.
- A recommendation regarding demand management.
- A recommendation regarding whether the City should enter into one of four shortage stages.
- A recommendation regarding communication with the public.
- A legal analysis of the recommended actions.

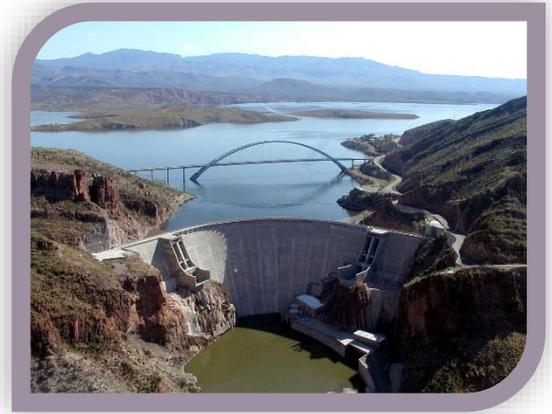
The Team shall continue to monitor the situation and meet as necessary throughout the duration of the shortage, updating strategies as necessary.

After the Water Resources Advisor determines that the shortage condition has passed, the Team shall prepare a report detailing the successes and failures of the strategies used during the shortage and provide a recommendation regarding ongoing planning and preparation for the next shortage.

WATER SHORTAGE STAGES & IMPLEMENTATION MEASURES

STAGE ONE TRIGGER – WATER WATCH

Upon the recommendation of the City Manager or his/her designee, the Mayor or City Council may declare a Stage One – Water Watch when a prolonged surface water shortage is predicted to affect Mesa.



Mesa’s Water Resources staff monitors the precipitation and water storage levels of the Colorado, Salt, and Verde River watersheds. A prolonged reduction in surface water supplies can be predicted several months prior to the actual announcement of a reduction in surface water deliveries. At this stage, Mesa is capable of meeting demand through remaining surface and ground water supplies.

STAGE ONE RESPONSE

Voluntary conservation measures may be implemented in Stage One. Examples of the types of measures that may be implemented in response to a Stage One – Water Watch event include:

- Increased monitoring of SRP and CAP surface water supply availability.
- Reporting by the Water Resources Advisor to the Water Resources Department Director, the City Manager, and the City Council as water supply conditions change.
- Reduction of water use at City facilities, including but not limited to reduction of hours of operation of water features and limits on over-seeding.
- Development of a public awareness program to alert residents to water shortage conditions, the potential impact to Mesa’s water supplies, and impacts of continued shortage conditions.
- Frequent communication with customers regarding hydrologic conditions and water status.
- Increased community education regarding water conservation.

STAGE TWO TRIGGER – WATER ALERT

Reduction Goal of 5%

Upon the recommendation of the City Manager or his/her designee, the Mayor or City Council may declare a Stage Two – Water Alert when SRP combined deliveries of stored and developed water are cut to less than 50% and/or CAP subcontract and GRIC water availability is cut to an amount that is less than 80% of the amount of subcontract and GRIC water used in the most recent normal flow year.



At this stage, Mesa is capable of meeting demand through its remaining surface water supplies, banked water, and wells. Additional voluntary water conservation measures may be implemented in Stage Two.

STAGE TWO RESPONSE

In addition to the measures implemented during a Stage One – Water Alert event, more extensive demand management measures may be requested of all water customers, including:

- Reduce water consumption 5% by eliminating waste, repairing leaks, and eliminating unnecessary outdoor water use.
- Discontinue lawn and landscape watering between the hours of 7:00 a.m. and 7:00 p.m.
- Reduce the frequency of outdoor watering.
- Eliminate use of decorative water features and outdoor misting systems.
- Eliminate over-seeding in the fall.
- Increase cooling tower cycles to three cycles of concentration or higher.

STAGE THREE TRIGGER– WATER WARNING

Reduction Goal of 10%

Upon the recommendation of the City Manager or his/her designee, the Mayor or City Council may declare a Stage Three – Water Warning when SRP combined deliveries of stored and developed water are cut to less than 33% and/or CAP subcontract and GRIC water availability is cut to an amount that is less than 60% of the amount of subcontract and GRIC water used by Mesa in the most-recent normal flow year.



At this stage, Mesa is capable of meeting demand through its remaining surface water supplies, banked water, and wells. Mandatory demand management strategies may be implemented in Stage Three.

STAGE THREE RESPONSE

One or more of the following measures may be implemented in response to a Stage Three – Water Warning event:

- Voluntary water management measures identified in Stages One and Two may become mandatory.
- Identify major water users and require them to develop a water conservation plan.
- Limit lawn watering per a published schedule.

Additionally, the City of Mesa may take actions such as the following:

- Examine commercial and residential development standards and recommend changes that will result in more efficient use of water.
- Remove turf from public rights-of-way and convert parks to meet the new water efficient landscape design standards.
- Intensify community education efforts.
- Increase staff resources to implement shortage response measures.
- Consider implementing civil penalties for wasting water.

STAGE FOUR TRIGGER – WATER EMERGENCY

Reduction Goal of 20%

Upon the recommendation of the City Manager or his/her designee, the Mayor or City Council may declare a Stage Four – Water Emergency when water deliveries are insufficient to meet projected water demand.

STAGE FOUR RESPONSE

Mandatory customer water use restrictions are implemented in Stage Four to ensure that basic water needs for Mesa residents and businesses will be met. In addition to the measures implemented during Stages One, Two, and Three, one or more of the following measures may be implemented in response to a Stage Four event:

- Mandatory water use restrictions.
- Limitation on new water connections.
- Shortage surcharges.

Water Shortage Stages

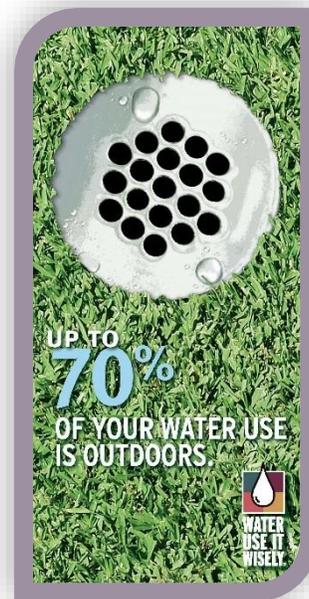


PUBLIC AWARENESS & OUTREACH OPTIONS

An important component of the Water Shortage Management Plan is informing the public when a shortage stage is declared and about conservation methods.

The purpose of this section is to outline various options for informing and educating customers and the general public. It is not an all-inclusive list and will evolve as technology changes.

- Media briefings
- Press releases
- City of Mesa Web site
- City of Mesa intranet
- Social media
- On-hold messages (for departments using this service)
- Utility bill messages
- Neighborhood Outreach meetings
- City of Mesa Listserv
- Posters (public places)
- Department, HOA, and other community newsletters
- Mesa Public Schools (i.e.: newsletters, educational programs)
- Newspaper ads
- Mesa Channel 11 news crawl (Emergency Only)
- Mesa Channel 11 public service announcement
- Door hangers or flyers
- Emergency notification systems (i.e.: Reverse 911)
- Chamber of Commerce outreach programs
- Workshops and educational programs
- Meetings with high usage customers
- Educational information/workshops for plumbing retailers, landscapers, others.
- Conservation incentives



Stage 1- Water Watch

City is capable of providing normal water service, but prolonged water shortage conditions exist or supply reductions predicted.		
Supply Management Measures	Municipal Demand Reduction Measures	Residential, Commercial, and Industrial Demand Reduction Measures
<ul style="list-style-type: none"> • Monitor available surface water supplies. • Monitor groundwater pumping capacity. • Planning to maximize use of water supplies “On” and “Off-Project.” • Planning to maximize use of New Conservation Space water to maintain water levels behind Roosevelt Dam or underground storage. 	<ul style="list-style-type: none"> • Request employees to conserve water at home and at work. • Request City departments to identify possible reductions (1% to 5%) of water. • Initiate Public Information/Awareness campaign. • Water in the Street: Request City Inspectors and Customer Service Representatives to identify and counsel customers on water waste. 	<ul style="list-style-type: none"> • Promote conservation measures. • Educate customers on indoor/outdoor water saving techniques.

Description: This stage will be characterized by increased awareness and customer communication to alert the community that there may be an upcoming episode of water supply reduction. Regional water suppliers may be experiencing the effects of extended dry weather conditions and may be preparing to respond to a potential reduction in future water deliveries due to differing water portfolios. The City may not need to respond in similar fashion.

Stage 2- Water Alert

City is capable of providing normal water service, but supply reductions predicted.		
Supply Management Measures	Municipal Demand Reduction Measures	Residential, Commercial, and Industrial Demand Reduction Measures
<ul style="list-style-type: none"> • Monitor available surface water supplies. • Monitor groundwater pumping capacity. • Planning to maximize use of water supplies “On” and “Off-Project.” • Planning to maximize use of New Conservation Space water to maintain water levels behind Roosevelt Dam or underground storage. • Utilize stored water credits to offset groundwater pumping. • Prepare application to Arizona Department of Water Resources for drought groundwater pumping exemption. 	<ul style="list-style-type: none"> • All municipal demand reductions measures from previous stage. • Request City departments to identify possible reductions (5% to 10%) of water. • Strengthen public information campaign initiated in Stage One. • Limit routine hydrant flushing. • Restrict turf watering/landscaping irrigation, at City facilities other than parks and right-of-way. 	<ul style="list-style-type: none"> • All demand reduction measures identified for this user category from previous stage. • Limit construction water use during peak demand. Use reclaimed water whenever possible. • Promote indoor/outdoor water audits. • Promote conservation with respect to operation and maintenance of swimming pools (i.e.: cover, leak repairs). • Water use reduction goal of 5%.

Description: This stage will be characterized by increased monitoring and evaluation activities related to the water shortage. Customer water usage and the corresponding revenue generated will be compared to normal use. The Team may recommend more specific restrictions depending on conditions.

Stage 3- Water Warning

City is capable of providing normal water service, but supply reductions eminent.		
Supply Management Measures	Municipal Demand Reduction Measures	Residential, Commercial, and Industrial Demand Reduction Measures
<ul style="list-style-type: none"> • Monitor available surface water supplies. • Monitor groundwater pumping capacity. • Planning to maximize use of water supplies “On” and “Off-Project.” • Planning to maximize use of New Conservation Space water to maintain water levels behind Roosevelt Dam or underground storage. • Utilize stored water credits to offset groundwater pumping. • Prepare and consider submitting application to Arizona Department of Water Resources for drought groundwater pumping exemption. 	<ul style="list-style-type: none"> • All municipal demand reductions measures from previous stages. • Request City departments to identify possible reductions (10% to 15%) of water. • Intensify public information campaign initiated in Stage Two. • Restrict winter grass, unless 100% effluent/reclaimed water is used. • Reduce turf watering/landscaping irrigation, at City facilities other than parks and right-of-way. 	<ul style="list-style-type: none"> • All demand reduction measures identified for this user category from previous stage. • Limit/enforce construction water use during peak demand. Use reclaimed water whenever possible. • Limit over-seeding for winter lawn. • Promote conservation with respect to operation and maintenance of swimming pools (i.e.: cover, leak repairs). • Water use reduction goal of 10%.

Description: In this stage it is anticipated that water shortage restrictions will become more severe. The Team will evaluate the need to recommend imposing mandatory water use restrictions on water use.

Stage 4- Water Emergency

City is not capable of providing normal water service.		
Supply Management Measures	Municipal Demand Reduction Measures	Residential, Commercial, and Industrial Demand Reduction Measures
<ul style="list-style-type: none"> • Maximize available surface water supplies. • Maximize groundwater pumping capacity. • Planning to maximize use of water supplies “On” and “Off-Project.” • Planning to maximize use of New Conservation Space water to maintain water levels behind Roosevelt Dam or underground storage. • Utilize stored water credits to offset groundwater pumping. • Submit application to Arizona Department of Water Resources for drought groundwater pumping exemption. 	<ul style="list-style-type: none"> • All municipal demand reductions measures from previous stages. • Request City departments to identify possible reductions (20%) of water. • Intensify public information campaign initiated in Stage Three. • No turf irrigation, unless 100% effluent/reclaimed water is used. • Eliminate turf watering/landscaping irrigation, at City facilities other than parks and right-of-way. • No hydrant uses except those required for public safety. • Prohibit ornamental fountains and water features. 	<ul style="list-style-type: none"> • All demand reduction measures identified for this user category from previous stage. • Prohibit construction water use during peak demand. Use reclaimed water whenever possible. • Prohibit over-seeding for winter lawn. • Promote conservation with respect to operation and maintenance of swimming pools (i.e.: cover, leak repairs). • Water use reduction goal of 20%. • Enforce reduction of cooling towers and evaporative coolers. • Enforce limitations for new sod and other landscape installations.

Description: Conditions that lead to this stage are unlikely. During this stage the primary focus of the Team response will be to maintain the health, safety, and economic vitality of the community to the maximum extent possible.