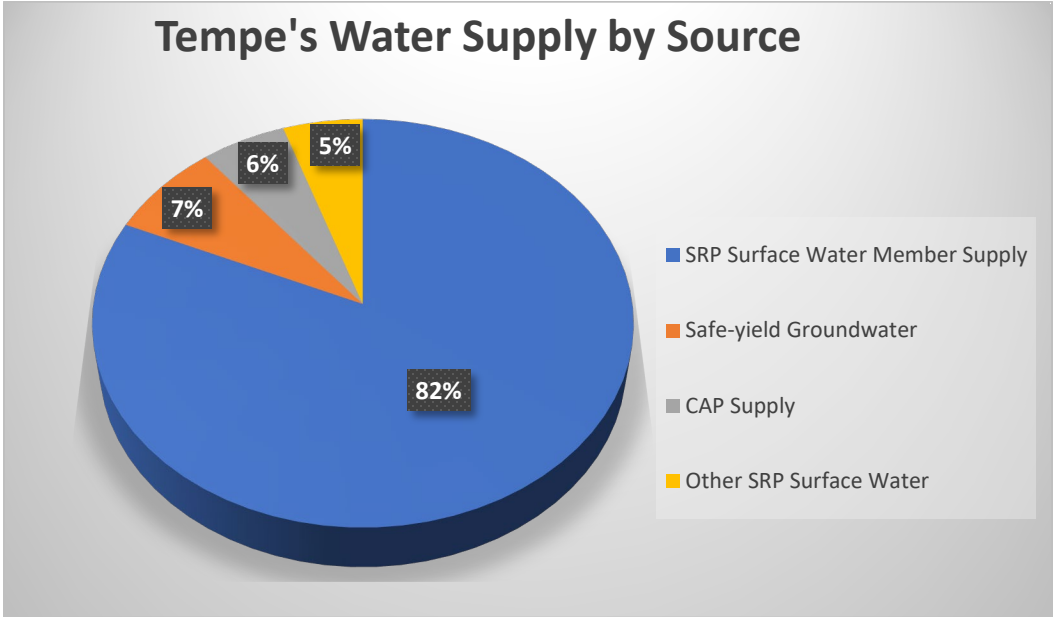




Drought Resiliency and Preparedness Update Salt and Verde River Surface Water Studies

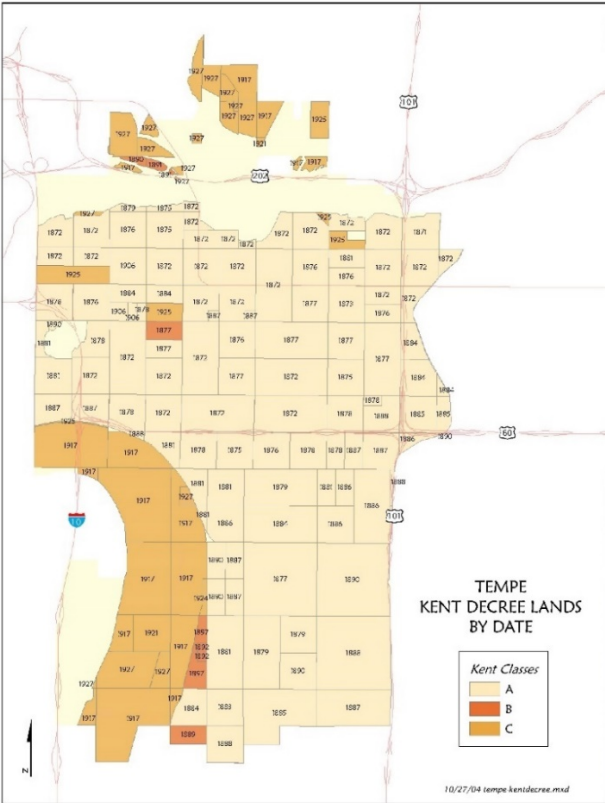
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The City of Tempe relies primarily on treated surface water, the majority of which is supplied by Salt River Project (SRP), to meet the demands of Tempe’s Water Service Area.



Salt River Surface Water Study

In 1903, farmers, ranchers and other landowners in the Salt River Valley became shareholders in SRP when they pledged more than 200,000 acres of their land as collateral to repay the loan for one of the first federal reclamation projects in the western United States. These lands were deemed “shareholder lands,” also referred to as “SRP Member Lands,” and received deliveries of the water stored and developed by SRP. Today, the majority of the lands within the Tempe Water Service Area have access to SRP Member Land Supplies.



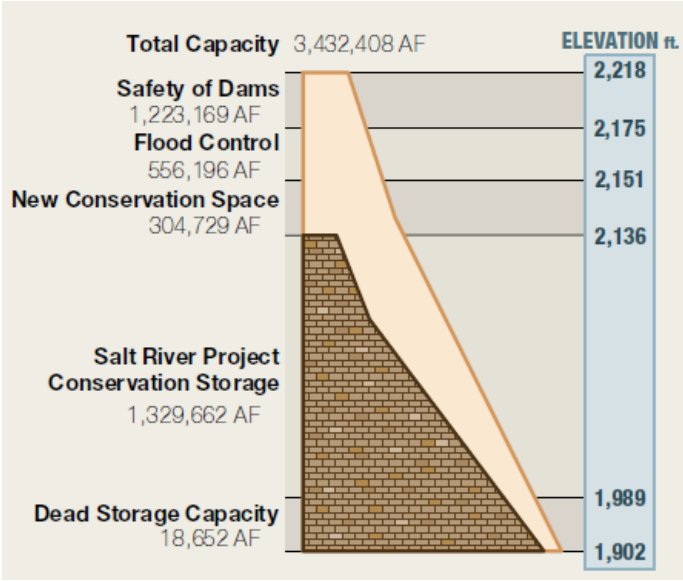
SRP Member Land Supplies are appurtenant to the land, meaning the water delivered associated with those rights can only be utilized to meet water demands on those lands. Aside from these supplies, SRP also delivers surface water that is appurtenant to Kent Decree Class A Lands with normal flow rights. Normal flow is defined as the amount of water that would have reached certain lands within the Salt River Valley in a given month, were it not for the construction of the SRP system. As with the water rights of SRP Member Lands, Class A Lands have decreed water rights that can only be utilized to meet water demand on those lands. Additionally, Class A Lands water rights pre-date construction of the SRP reservoir system and are considered senior water rights to SRP shareholder rights.

In addition to SRP Member and normal flow supplies, SRP also delivers Tempe’s share of Theodore Roosevelt Dam New Conservation Space (NCS) water. Unlike SRP member land or normal flow supplies, NCS water is not appurtenant to the land, meaning it can be put to beneficial use anywhere within the Tempe Water Service Area. NCS water was created by increasing the height of Theodore Roosevelt Dam in 1989. As part of this project to provide greater flood control on the Salt River, a portion of the newly created storage space was deemed safe to utilize for long-term water storage which came to be known as NCS. The space, and the water that is stored within it, belongs to the six valley cities who partnered with the federal government to provide funding to increase the height of the dam; specifically, Tempe, Phoenix, Mesa, Scottsdale, Glendale and Chandler.





Although the height of the dam was increased by 77 feet, NCS storage exists only in the first 15 feet of the new dam. Above NCS is Flood Control Space (FCS) and the Safety of Dams Space. Due to the constraints of the current operation manual for the dam, water is not routinely stored in either FCS or Safety of Dams space behind the dam.



When the height of Theodore Roosevelt Dam was increased, the exact length of time the dam could be safely operated with water stored temporarily in FCS was not determined. Since that time, the water elevation in Roosevelt Lake has reached FCS, requiring the dam to spill water that could otherwise be stored. This has occurred with sufficient frequency to justify further evaluation of the length of time the dam can be safely operated with water stored in FCS. To accomplish this, SRP has initiated a study, partnering with the Bureau of Reclamation and the Army Corps of Engineers,

to better understand how SRP can continue operating the dam safely while allowing temporary storage of water in FCS, which would provide more time for potential use of the renewable resource provided by floodwaters. Less spilling of floodwaters by SRP's dams and more stored water is beneficial to municipal water

providers like Tempe. Storing more surface water provides a renewable source of water supply to meet demands and encourages less pumping of groundwater.

The proposed study suggests evaluating a temporary deviation from the dam operation manual, which would last for a period of five years. During this time, SRP would allow water to be stored in FCS for up to 120 days and accumulate into the first five feet of FCS. This deviation would be allowed to occur at least three times during the study period and provide valuable data to determine if a permanent modification to the dam operation manual is feasible.

There is no construction associated with an operation manual temporary deviation study. However, partners like Tempe will share in the costs associated with the utilization of federal resources required to oversee the study and evaluate the data generated. Based on initial estimates, Tempe's portion of the costs will be approximately \$30,000, which has been budgeted for water resources studies of this nature and will be funded from the Water/Wastewater Fund.

Verde River Surface Water Study

Although smaller than the Salt River in reservoir capacity, the Verde River provides an important source of renewable surface water to SRP Member Lands throughout the Valley. The conservation storage capacity of the SRP Salt River reservoir system is about two million acre-feet. The SRP Verde River reservoir system provides about 300,000 acre-feet of conservation storage capacity.

The first dam on the Verde River (below left) is the Bartlett Dam, which was constructed between 1936 and 1939.



The second dam on the Verde River (above right) is the Horseshoe Dam. Completed in 1946, the dam and associated reservoir is far from the Valley, and access to this remote site is challenging. Additionally, Horseshoe Reservoir is home to endangered species and the lake is managed to balance the need for stored water and providing protection to sensitive habitat in the area.

The original capacity of Horseshoe Reservoir was estimated at about 144,000 acre-feet. In 2012, a preliminary sediment survey indicated that as much as 46,000 acre-feet of reservoir capacity has been lost to sediment accumulation. In recent years, the Verde River system has experienced spill conditions about 44 percent of the time. Increased spilling reduces the potential for storage of renewable surface water, which can be used sustainably to meet the demands of SRP Member Lands in Tempe and throughout the Valley.

In an effort to determine how to best manage sediment in Horseshoe Reservoir, SRP engaged the Bureau of Reclamation in 2020, to conduct a federal appraisal study to investigate and perform preliminary evaluation of alternatives to mitigate the sediment. Federal appraisal studies do not require significant resources, as they are intended to compile existing data and identify additional data needed, should the study move to the feasibility phase. During the appraisal phase, three primary alternatives to mitigate the sediment were identified: 1) Do nothing and let the sediment continue to slowly accumulate in Horseshoe Reservoir; 2) Physically remove the sediment; 3) Modify Bartlett Dam to allow water once stored behind Horseshoe Dam to be contained behind Bartlett Dam with Horseshoe Dam being repurposed as a sediment trap for the larger Bartlett Reservoir.

Initiation of a federal feasibility study requires congressional approval, significant resources and non-federal partners. As sediment in Horseshoe Reservoir is impacting the ability of SRP to store water pursuant to the water rights of the SRP Member Lands within the Tempe Water Service Area, it is logical and prudent for Tempe to continue to be involved in this process. The feasibility phase of the study, if approved, will likely cost approximately 10 million dollars and take four years to complete. The federal government will provide funding and oversight for the study, but non-federal partners like Tempe will be expected to share in the cost. The percentage of Tempe's share will depend on many factors including the number of non-federal partners and the federal funding available. At this time, the majority of the municipal water providers within the Salt River Valley, that have SRP Member Lands within their water service areas, have indicated they are likely to provide support for the project. Based on this information, the approximate funding contribution from Tempe could range from approximately \$60,000 to \$150,000 per year for the four year duration of the feasibility study.

Tempe's involvement in these studies is in alignment with the community's willingness to invest resources to address the effects of climate change and maintain drought resiliency. The goal of each study is to protect access to renewable supplies of water to meet demands now and into the future. It is not known at this time whether or not additional surface water supplies will become available as a result of either study. This does not diminish the fact that Tempe, and the water rights of the lands within the Tempe Water Service Area, will ultimately benefit if surface water supplies are protected and utilization of groundwater to meet demands is reduced.