

Jacobs

IN ASSOCIATION WITH



Arizona Water Buffalo LLC
Hydrology & Water Resource Mgt.

CITY OF PEORIA

Peoria Integrated Water Utility Master Plan

Final Report

September 30, 2025



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EXPIRES 03/31/28



EXPIRES 03/31/27

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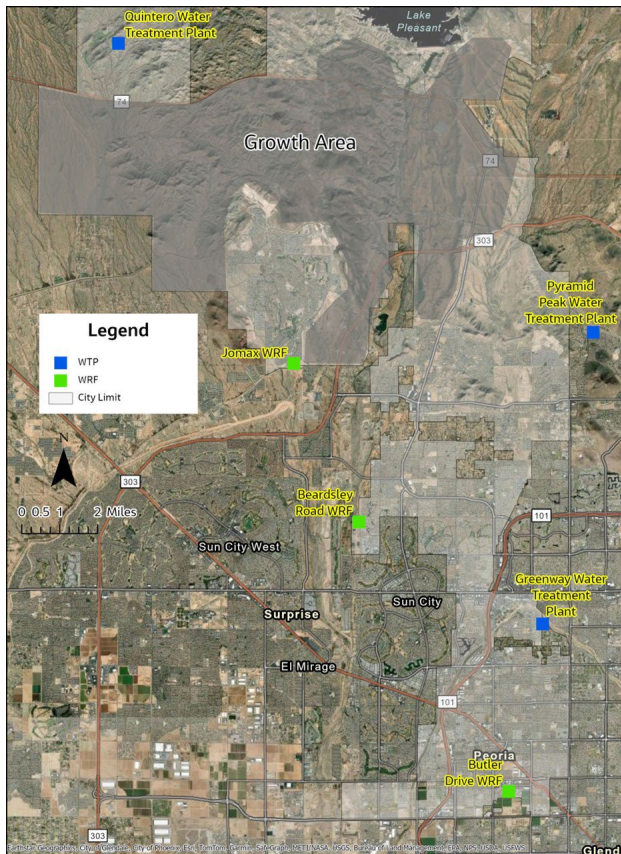
Executive Summary

The City of Peoria (City) is experiencing rapid residential, commercial, and industrial growth, similar to many municipalities in the Phoenix metro area. As such, the Integrated Water Utility Master Plan was updated to provide a comprehensive plan for demand growth; water supplies; and potable, wastewater, and reclaimed infrastructure, including the following elements:

- Water resource planning
- Water system planning
- Wastewater system planning
- Reclaimed system planning
- Capital improvement planning

Overview

Peoria's Treatment Facilities and Future Area of Growth



IWUMP Objectives:

- Set water strategy and vision
- Identify and inform project prioritization and timing
- Inform 10-year capital improvement program (CIP)
- Inform development impact fee program
- Define planning and engineering parameters
- Inform Peoria's 100-year Designation of Assured Water Supply
- Comply with Arizona Revised Statutes

The City's potable water service area is divided into the Salt River Project (SRP) service area (referred to as On-Project) and the Central Arizona Project (CAP) service area (referred to as Off-Project), based on these two surface water supplies. Although much of the southern portion of the City is built out, the northern area will experience growth and development in the coming decades.

Peoria's potable water system consists of several pressure zones that are served primarily by two water treatment plants:

- Greenway Water Treatment Plant, which primarily treats SRP water
- Pyramid Peak Water Treatment Plant operated by the City of Glendale and jointly owned by Peoria, which treats Peoria's CAP supply

In addition to surface water, potable water is also delivered from groundwater wells primarily during peak demands in summertime and distributed via booster stations, storage reservoirs, and pressure reducing valves.

The City's wastewater collection system consists of more than 860 miles of sanitary sewer pipeline that collects and conveys water to three water reclamation facilities (WRFs): Butler Drive WRF, Beardsley Road WRF, and Jomax Road WRF (Quintero WRF is not operational).

CAP Reliability Impacts Peoria's Water Supply that Drives Planning for Advanced Water Purification and Recharge/Recovery.

Concerns over the long-term reliability of Peoria's allocation of CAP water provides a strong incentive for the City to maximize groundwater recharge with reclaimed water or to consider advanced treatment of reclaimed water for future direct delivery.

The existing reclaimed water system has been developed in connection with each of the WRFs,

where reclaimed facilities that deliver treated effluent from each WRF currently operate independently without connections between systems.

Planned improvements to interconnect disparate components of the reclaimed system will enhance the City's ability to optimize reclaimed water supplies, whether direct delivery to customers or recharge, particularly in the northern part of the system where Peoria's major growth is anticipated. The plan to interconnect the reclaimed systems will also provide flexibility in terms of locating a future Advanced Water Purification (AWP) facility or facilities.

Water Resource Scenario Planning Provides a Flexible Implementation Strategy

The City has a diverse water resources portfolio consisting of surface water, groundwater, and reclaimed water sources. Each of these supply sources has its own set of delivery and use restrictions based on regulatory and contractual obligations that affect where and how they can be used to meet the community's needs.

Jacobs used scenario planning to prepare the City for multiple water resource futures, including variations in both supply and demand over a 30-year simulation period. The scenarios that were ultimately selected provide a bracket of the potential range of reductions to the City's water supplies.

Peoria's Diverse Water Resources Portfolio:

- Surface water
 - SRP
 - Colorado River supplies
 - CAP Municipal and Industrial allocation
 - Tribal leases
- Groundwater
 - Groundwater Allowance
 - Extinguishment credits
 - AWS phase-in credits
 - Incidental Recharge credits
- Reclaimed water
 - Direct delivery for non-potable uses
 - Underground storage and recovery
 - Future potable water use
- Long-term Storage Credits (LTSC)
 - Recovery of CAP/reclaimed/deviation water

- Supply alternatives included full allocation of CAP supplies, black swan events affecting the SRP or CAP infrastructure (full outages), partial cuts to the City's CAP supplies (about one-third), and deep cuts to the City's CAP supplies. The partial cut to CAP supply was considered the "baseline" scenario for future planning.
- Scale and duration of CAP shortage is the most important variable for supply scenarios.
- All supply scenarios require more well capacity, and all require AWP except the best-case scenario that includes the City's full CAP allocation and baseline SRP supplies.
- Demand scenarios included low, medium, and high with varying levels of conservation and future large user demands. Demand is generally projected to double by 2052.
- Future master planned communities and potential large water users in the Vistancia Commercial Core and Peoria Innovation Core drove demand scenarios, with conservation practices and scale of future large water users being key variables.

Future Water Supply Scenarios:

- CAP Scenarios
 - Full allocation (zero reduction)
 - New baseline – about a one-third reduction
 - CAP deep drought shortage (permanent 75% reduction)
 - CAP black swan – near and far (100% 5-year reductions starting in 2025 and 2048)
- SRP Scenarios
 - Densification and redevelopment combined with the historical drought (Baseline)
 - Infrastructure emergency

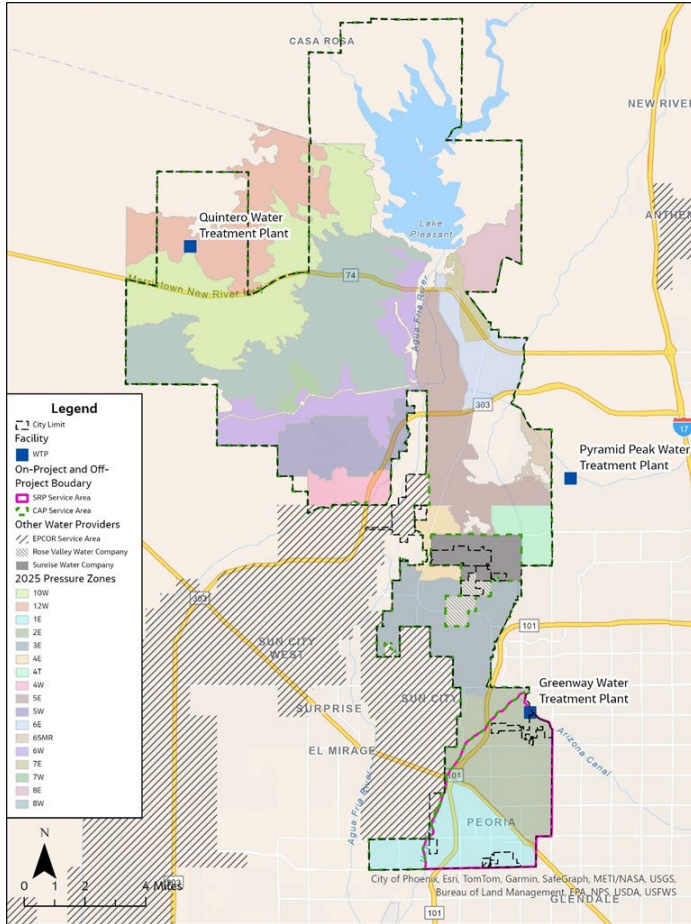
An analysis of several supply and demand combinations shows the City is poised to grow while maximizing its water resource portfolio through key investments. The City's diverse portfolio enhances its ability to serve new customers, where AWP will be a key sustainable resource in the future. In addition to AWP, the City should also invest in recovery well infrastructure that leverages their recharged potable and non-potable supplies.

Water System Plan

Peoria's CAP Service Area Is Highly Undeveloped.

The City's water service area is expansive; roughly the lower half of the current service boundary is developed and includes customers who receive service. The remaining service area is largely undeveloped.

Planning for the future involved updating and validating the potable system hydraulic model and performing a comprehensive assessment of the current and planned (2052) system infrastructure for system pressure, pipeline velocity, and reservoir storage under peak summer demand and fire flow scenarios.



Existing system requires minor improvements:

Peoria's existing potable water system is well designed, requiring relatively minor improvements today. Improvements to the existing system are generally projects that support fire flow delivery. In addition, more than a dozen inactive wells in the system are affected by water quality or require rehabilitation. Capital projects to restore or replace a few of these facilities are also planned.

Existing Water System:

- 3 WTPs
- 30 wells
- 29 booster stations
- 25 storage tanks
- 970 miles of distribution mains
- 45 miles of transmission mains

Buildout system focuses on growth and operational flexibility, reliability, and redundancy:

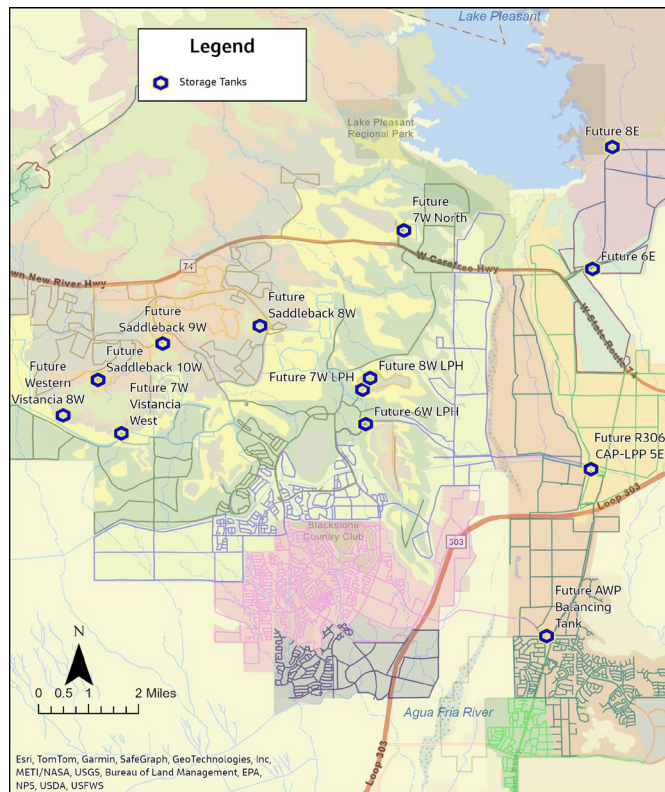
The buildout system was designed to serve future customers and also to provide operational flexibility and improve system reliability and redundancy. The buildout system recommends additional supply through AWP implementation, including

additional facilities to store and transmit supplies through a system that enhances redundancy. Several new booster stations to distribute water across pressure zones and meet customer demands and additional storage tanks are planned. Significant investment is needed to accommodate future water demand and CAP supply reduction projections. New supplies are needed to meet demands, especially in the northern portions of the service area. The planned CAP/ Lake Pleasant Parkway (LPP) recovery wellfield is an important project, and it is in a centralized location to support many pressure zones. With

continued growth in Vistancia and new master planned communities, including North Peoria Gateway, Saddleback, and Lake Pleasant Heights, there is a need to move supplies from the east to the west to meet demands. The major planned water projects include the following:

- A transmission main or mains to provide connectivity between the eastern and western portions of the CAP service area.
- Additional production facilities, including the CAP/LPP recovery wellfield, the Agua Fria recovery wellfield, and the Hieroglyphics Mountain recovery facility.
- A future AWP facility or facilities.
- A potential interconnect with City of Phoenix’s Lake Pleasant Water Treatment Plant.
- Redesigned and expanded Agua Fria booster station that serves as a lynchpin to convey water to the west and north.
- Infrastructure, including conveyance, pumping, and storage to serve growth.
- Various infrastructure upgrades to support system redundancy.

Future Water System Storage Provides Support for Seasonal and Diurnal Demand and Fire Flow



Future Water System:

- 3 WTPs plus AWP and potential interconnect with City of Phoenix Lake Pleasant WTP
- 37 wells or recovery wellfields
- 54 booster stations
- 43 storage tanks
- 1,300 miles of pipelines

Wastewater System Plan

Peoria’s Jomax Wastewater Service Area is the Least Developed and Projecting Significant Growth

The wastewater collection system consists of more than 860 miles of sanitary sewer pipeline that collects and conveys wastewater to three water reclamation facilities from four wastewater service areas from south to north: Butler, Beardsley, Jomax, and Quintero (currently hauled to the Jomax Road WRF as the existing Quintero WRF is not operational). In addition to gravity flow, the City’s wastewater collection system has several lift stations that collect and pump sewage to the three WRFs, each of which being capable of producing Class A+ reclaimed water for delivery to the City’s reclaimed water system.

Significant development is anticipated in the Jomax and Beardsley service areas to support the Vistancia Commercial Core, Peoria Innovation Core, and several master planned communities. The southern Butler service area and the central Beardsley service area are fairly built out.

Planning for the future involved a flow monitoring field study and updating and validating the wastewater collection system hydraulic model using the City’s supervisory control and data acquisition data.

Existing system requires no improvements:

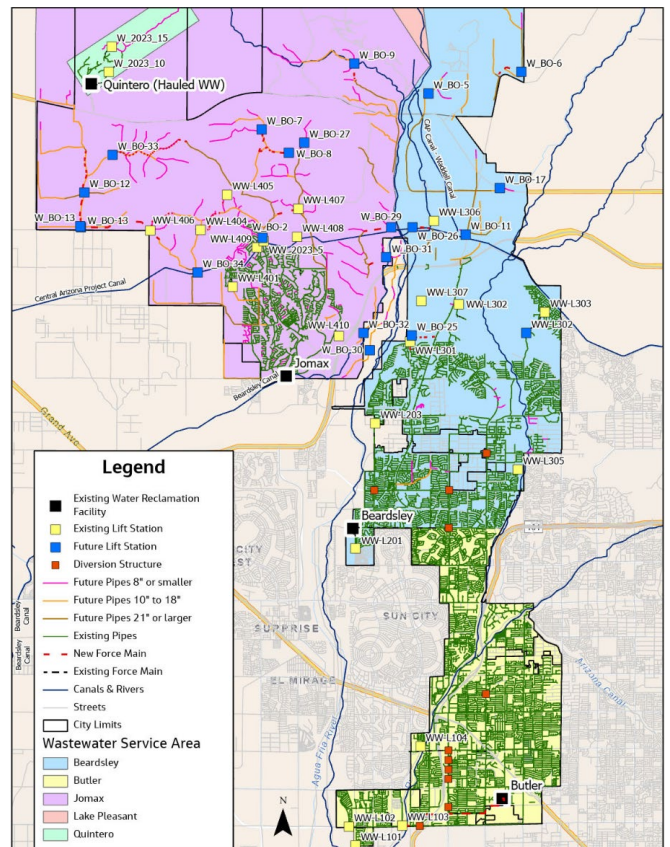
The existing collection system was assessed for adequate flow depth and velocity. A surcharge analysis was also performed resulting in no high-priority problem areas in the existing system, and only a few lower-priority concern areas to be addressed through inspection and maintenance practices.

Existing Wastewater System:

- 3 WRFs (Quintero is not operational)
- 15 lift stations
- 861 miles of pipelines
 - 17 miles of force main
 - 71 miles of gravity transmission pipe
 - 773 miles of gravity collection pipe

Peoria’s Buildout Wastewater System Requires 22 New Lift Stations in the Northern Part of the City and 175 Miles of Collection Pipelines

The buildout scenario focuses on development in the northern portion of the service area and identifies WRF expansions, new pipelines, lift stations, and force mains needed to meet future flows. All recommended projects are, therefore, for the northern portion of Peoria’s wastewater service area.



Future Wastewater System Needs:

- 22 new lift stations
- 15 miles of force main
- 160 miles of gravity pipe

Reclaimed Water System Plan

The existing reclaimed system operates as three distinct systems in association with the Jomax Road WRF, Beardsley Road WRF, and Butler Drive WRF with no interconnection. The future vision is to have all three disparate systems interconnected, providing Peoria with the ability to use its reclaimed water for its “highest and best use.” Implementing a single integrated system is a cornerstone of Peoria’s long-term water strategy. Planning for the future involved developing a reclaimed system hydraulic model and assessing the future (2052) system needs.

Buildout system focuses on Interconnection:

Buildout Interconnectivity Will Allow Peoria to Optimize Use of Reclaimed Water

The City has been implementing capital projects to connect the disparate systems with a near-term goal of transferring reclaimed water between the systems. The ability to transfer reclaimed water between service areas will enable recharge of reclaimed water to benefit Peoria’s existing and planned recovery wells. Improvements also create greater flexibility for the City to manage its water resource portfolio and enhance the resilience of the potable water system through implementation of AWP.

Future Reclaimed System Improvements

Improvements that have not yet been constructed include two storage reservoirs, a new booster station, and over 20 miles of pipelines.

