

Project

Cave Creek Water Reclamation Plant: Rehabilitation Project

Project Components

- Determine Design Flow Rates
- Recommendation of Potential Effluent Uses
- Treatment Process Decision Matrices
- Preliminary Design and Hydraulic Profile
- Preliminary evaluation for capital and operational costs

Background

The Cave Creek Water Reclamation Plant (CCWRP), is one of three wastewater treatment facilities owned (or co-owned) by the City of Phoenix:

Wastewater Treatment Plants owned/operated by the City of Phoenix			
Facility Name	Capacity	Ownership	Status
91st Ave WWTP	230 MGD	SROG (Glendale, Mesa, Phoenix, Scottsdale and Tempe)	Active
23rd Ave WWTP	62 MGD	City of Phoenix	Active
Cave Creek WRP	8 MGD	City of Phoenix	Inactive

The CCWRP was constructed to support development north of the Central Arizona Project canal delivering Colorado River water. When the facility was placed into operation in 2002, the intent was to reduce the impact of growth-related flow on older existing infrastructure and to produce Class A+ reclaimed water that could be utilized for irrigation and recharge within the CCWRP's service area. Projected population and development north of the Loop 101 Freeway had slowed significantly by 2009, and the City decided it would be more efficient to shut down the CCWRP and treat wastewater flows at the two downstream plants.

Subsequently, growth in the areas tributary to the CCWRP returned. Based on Maricopa County Association of Governments (MAG) population projections and a flow study completed by the City in late 2017, it was determined that the CCWRP could potentially start up and operate near the original design flow capacity.

Problem Statement

The project team shall evaluate population projections and the historic wastewater characteristic data to develop a recommendation for the design flow capacity. The team will also research potential discharge/use options for the effluent and recommend water quality parameters not only suitable for

the potential use(s) but to also meet applicable water quality standards and regulations. The design criteria for the project will be comprised of the team's recommended design flow capacity as well as the recommended use of the effluent water and the corresponding water quality parameters. The team will determine what improvements can be made to meet the desired future treatment capacity and water quality parameters. Emphasis shall be placed on optimizing the process for overall treatment efficiency including chemical and energy use.

The project shall include the following components:

1. Analysis of population data and projections, historic flow and wastewater characteristic data to develop design criteria (flow, peaking factors, concentrations, design life, etc.).
2. Research and recommend uses for the effluent using a Decision Matrix which evaluates, at a minimum: social and environmental factors as well as the lifecycle cost of the potential use. Develop recommended effluent water quality parameters based on that recommended use.
3. Analysis of existing treatment process and proposed treatment alternatives.
4. Selection of desired treatment process/technology using a Decision Matrix which includes, at a minimum: feasibility/constructability, lifecycle costs, maintenance and operation requirements, staffing levels, process efficiency improvements, etc.
5. Final report that presents and discusses the following:
 - a. Determination of design criteria.
 - b. Recommendation for effluent use
 - c. Analysis of existing treatment process.
 - d. Options for process improvement and optimization.
 - e. Evaluation and selection of proposed improvements.
 - f. How the proposed improvements will be implemented or constructed (phasing) as well as proposed staffing levels required.

Additional Information to be Provided

1. Flow and Wastewater Quality Data (2002-2009)
2. *Basis of Design Report*
3. Cave Creek SOP Library: Background, Overview and Design Documents