

Making baseball bloom in the desert

Reclaimed water gives life to Arizona's Camelback Ranch-Glendale, the award-winning spring training facility for two major league baseball teams.

BY **RON HALL**, EDITOR-AT-LARGE

IN WATER-STRESSED regions of the United States, reclaimed water is beginning to replace potable water to irrigate turfgrass and other landscape plants. It will almost certainly play a larger role in irrigation as our nation's population grows and demand for fresh water increases.

The Camelback Ranch-Glendale's Spring Training Facility, an award-winning project in Glendale, AZ, demonstrates several innovative ways that reclaimed water can be used on a landscape, beginning with irrigation, of course.

Reclaimed water can add to the aesthetics of a property — in the case of Camelback Ranch to create a beautiful, fish-stocked lake bounded by pedestrian walkways. Reclaimed water can also recharge an aquifer or be stored underground for future use, which is where some of Glendale's reclaimed water ends up. In other words, it can be "banked" for future use. This is now commonplace in Arizona, and it's beginning to catch on elsewhere in the United States.

A rocky start

While Camelback Ranch has won numerous awards since its opening and has been lauded for its environmentally friendly design features, not everything went smoothly to start with at the 141-acre development — not in terms of using reclaimed water, anyway. Initially, the management and players of the two Major League Baseball teams that share the site for spring training — the Los Angeles Dodgers and the Chicago White

Spring training attracts thousands to the green grass of Camelback Ranch.

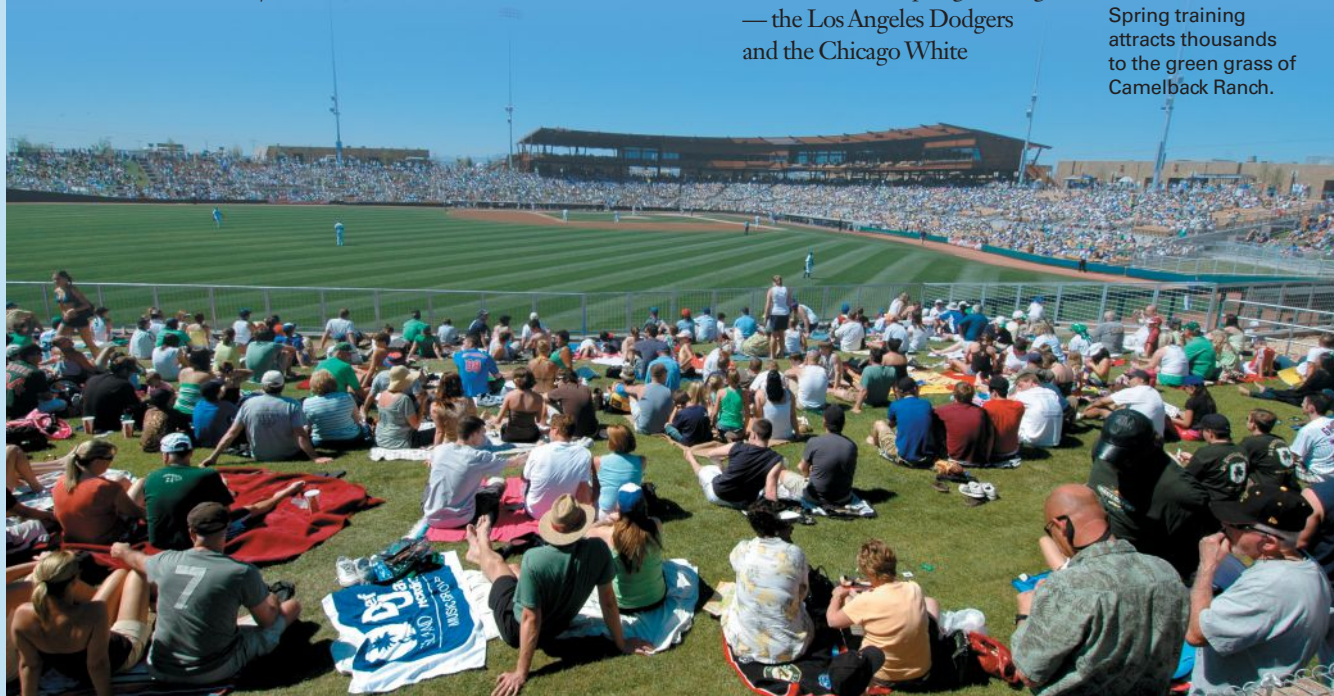


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Sox — didn't like the idea of irrigating their new hybrid Bermudagrass baseball fields with reclaimed water.

"Some of the players' perception might have been that we were going to use raw sewage. Of course, that wasn't the case," says Greg Gesicki, pointing out that reclaimed water is increasingly used to irrigate golf courses. "So I asked some of the players to go and play golf. Afterward, when I told them that the courses were irrigated with reclaimed water and that the water had been treated to a very high quality, I think that helped change their perception."

Gesicki, of Stanley Consultants, was brought onto the project as project coordinator during the planning phase by Craig Johnson, assistant city engineer who realized the project was too large for him to coordinate alone. Camelback Ranch is a City of Glendale project and is owned by Glendale, even though portions of the project extend into Phoenix. Johnson was the city's lead person on the project; Stanley Consultants provided civil engineering, construction administration, site inspections and program management.

It took some education, but management of the two teams and their insurers approved the use of reclaimed irrigation water, a decision made easier after tests for the presence of nitrates and other substances showed that the quality of the water was suitable for growing healthy turfgrass. At that point, the project proceeded.

And what a project it turned out to be: In addition to the main playing field at the game-day stadium that seats 13,000 (the largest of any spring training stadium), there are 12 practice fields and three practice infields — all with Bermudagrass playing surfaces irrigated with reclaimed water.

But because the fields had to be completed prior to the opening of 2009 spring training, putting this project

together was no cakewalk.

Construction on the 141-acre site began in October 2007, and had to be ready for play by Feb. 25, 551 working days. That made it necessary that the 50 stakeholders, the more than 90 subcontractors and the 700-plus craft workers worked cooperatively, says Johnson.

"We were designing and building at the same time. That is the only way you can do an accelerated schedule like this," he says.

Water supply

One of the key features of the project (apart from the stadium) is its 3.5-acre lake, which provides water to irrigate the turfgrass playing fields and the site's 60 acres of desert and drought-tolerant ornamentals. The site contains more than 5,000 trees and landscape plants, including a citrus grove — a reminder of the years the Dodgers spent training at its Florida Dodgertown complex before relocating to Arizona.

"One of the good things about the Camelback Ranch site is that it's right across the river (Agua Fria) from our Western Area Reclamation facility," says Johnson. "The sewage flows from the western area of the city to this



Major League Baseball's spring training history in Arizona goes back to 1946, when Bill Veeck, owner of the Cleveland Indians, convinced fellow owner Horace Stoneham to bring his New York Giants to the desert, as well. Veeck's Indians set up camp in Tucson, and the Giants began training in Phoenix. Less than 1 million people lived in Arizona at the time. In 1951, the Chicago Cubs became the third MLB team to train in Arizona; in 1954, the Baltimore Orioles became the fourth — and the so-called Cactus League was born.



treatment plant, which then, after treatment, puts out reclaimed water that meets A-plus standards for effluent. We recharge the reclaimed water back into the ground to get future water credits with the state Department of Environmental Quality."

Some of the reclaimed water, on its way to underground storage, is diverted and piped under the river via low pressure to Camelback Ranch's manmade, fish-stocked lake, which serves two functions: In addition to providing irrigation for the baseball fields and desert landscape, it also serves as the largest landscape feature on the desert property. The lake is divided into upper and lower sections by a pedestrian bridge. Its encircling walkways are usually filled with leisurely walkers. Not unexpectedly, the pond is closely monitored.

"We have electronic lake level equipment that senses when the water drops to a certain level in the lake, and we can then pump water back into it. We want the lake to look nice and to keep the water pleasing to the eye," says Johnson.

"This is a large-scale water feature," adds Gesicki. "It was built into the facility as an architectural feature. HKS (the primary architect on the project) and its sub-consultant Ten Eyck Landscape Architects did a great job in blending it into the site."

Aqua Engineering Inc., an irrigation consulting firm headquartered in Fort Collins, CO, designed and specified the site's irrigation, using the lake as its supply. The company, with an office in



A pedestrian bridge divides the 3.5-acre lake that provides irrigation for the property.

ENVIRONMENTAL BENEFITS OF USING RECLAIMED WATER

Reclaimed water, also known as recycled water, is recovered from domestic, municipal and industrial wastewater treatment plants and is treated to standards that allow safe reuse. Wastewater treated to certain defined standards is typically safe for most uses, except human consumption.

The use of reclaimed water for urban landscapes, parks, golf courses and sports fields is rapidly growing, and offers the following benefits:

Decreased diversions of freshwater from rivers, streams, lakes and other ecosystems.

- Reduced use of potable water by industrial, housing and recreational development projects.
- Reduction in the amount of groundwater withdrawal, which has an impact on baseflow in many rivers and streams.
- Increased water quality, by reducing the amount of nutrients entering our rivers, lakes and other bodies of water.

There are no federal guidelines regarding the use of reclaimed water. The U.S. Environmental Protection Agency has left it up to each state to develop its own regulations regarding reclaimed water use. The purpose of these regulations is to protect human health and water quality, meaning that wastewater must be treated to certain defined levels (using a variety of proven methods) to destroy specific pathogens and remove harmful microconstituents.

Class A effluent, the water used for irrigation at Camelback Ranch, is one of five classes of reclaimed water recognized by the Arizona Department of Environmental Quality. Class A effluent has a total nitrogen concentration of less than 10 mg/l, minimizing concerns over nitrate contamination of groundwater beneath the sites where it is applied.

Equally important for the suitability of reclaimed water to irrigate turfgrass is its salinity, or salt concentration. High salt concentrations reduce water uptake in plants, lowering the osmotic potential of the soil. In other words, the quality and suitability of reclaimed water for landscape irrigation may vary considerably from water agency to agency, so it's vital to assess and monitor the quality of reclaimed water, as well as to develop a landscape management program that addresses water quality issues, such as salt buildup.

Phoenix, was involved in all of the site's irrigation except for the sports fields.

"We've been involved in quite a few spring training facilities and sports turf projects in Arizona," says Doug Macdonald, vice president and principal of Aqua Engineering, adding that in this project, Roger Bossard, veteran

sports field manager of the Chicago White Sox, designed and oversaw those ball field systems, as he did with every aspect of the fields' construction.

Bossard, who manages U.S. Cellular Field in Chicago, chose Muellermist Irrigation Co., to install the fields' laterals and sprinklers. Aqua Engineering

designed and oversaw irrigation for the remainder of the property.

"This project was on the larger side, a high-profile project," says Macdonald. "We began planning for it two years prior to its opening."

Aqua Engineering developed the construction documents for the irrigation system and central control system used to irrigate the site's mixed-use landscape areas. The system's weather station provides data that provides irrigation based on daily, on-site evapotranspiration rates, says Macdonald.

The company also designed and oversaw the installation of a pump station, featuring low pressure and high-volume discharge with a recirculation feature, that maintains the aesthetic component of the lake. A variable-frequency drive adjusts pump speed to provide constant discharge pressure to the irrigation system, reducing energy consumption considerably, says Macdonald.

The design and incorporation of a lake liner and appropriate edge treatments was also crucial to the long-term health, usefulness and attractiveness of the lake, he adds.

The Camelback Ranch project landed several prestigious design and project management awards, and earned Aqua Engineering special recognition from the American Society of Irrigation Consultants (ASIC) earlier this year.

"This project was a special project, and we're proud to have been a part of it," says Macdonald. "Camelback Ranch is a destination opportunity for many people."

Gesicki agrees. "The project involved 18 months of coordination and cooperation among many people, and there were lots of challenges, the largest probably being scheduling," he adds. "I think I can say for everybody involved in the project that Camelback Ranch provides a great environment for people to enjoy baseball and its many other amenities." LM