

WATER WISE

PART



AS WATER BECOMES SCARCER,

irrigation certification may be the sales edge that eliminates the competition. And for lessons on using water more efficiently and reclaimed water as a resource, look to California and Arizona.

PHOTO BY ISTOCK INTERNATIONAL INC

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AS THE WORLD hovers on the verge of a water crisis, we all need to examine how much water we use in our daily lives, and for what purposes. Landscape irrigation has undergone a great deal of scrutiny for this very reason. Green spaces, however, provide significant societal and environmental benefits that can't be ignored.

In addition to making our environment more beautiful, grass, trees and plants release oxygen, absorb carbon dioxide, control erosion and naturally insulate our homes and buildings. In other words, while water conservation and smart plant selection are certainly imperative, simply reducing the number of green spaces around the world isn't enough to fully answer our water problems.

So, what is the solution? There's no magic formula, but the answer lies within a more balanced approach. Not only do we need to conserve water and apply it more efficiently, but we also need to harvest that water from alternative, sustainable sources. Harvesting water for landscape irrigation can be as simple as collecting rainwater in a bucket or as complex as creating vegetative swales and ponds to capture runoff. Using mechanical systems to reclaim water that's been used for the purposes of hand-washing, showering or laundry takes the process a step further by reusing water that would have quite literally gone down the drain.

CityCenter of CityNorth, a mixed-use urban development in Phoenix, Arizona, is a prime example of how commercial sites can successfully incorporate water harvesting into their sustainability initiatives. By employing a state-of-the-art water harvesting system that collects water discharged by on-site cooling towers, the site meets its irrigation needs even during the hottest summer months. Meanwhile, central control technology, drip irrigation, water-smart valves and flow sensors from Rain Bird enable the site to take full advantage of its reclaimed water. With its innovative, sustainable irrigation system, CityCenter truly embodies Rain Bird's guiding vision, The Intelligent Use of Water™.

Using alternative water sources for landscape irrigation is not just a trend that only makes sense in desert locations like Phoenix. It's likely that the world's water concerns will continue, making the efficient use of reclaimed water across the globe not a choice, but a necessity. Rain Bird is dedicated to providing irrigation products and systems that make the most of every drop of water — regardless of its source.



Certification:

The professional edge

BY KEN KRIZNER

As water use becomes a bigger issue, certification may be required.



A CALIFORNIA LANDSCAPE company placed a bid on a contract with a local municipality earlier this year that would have been worth thousands of dollars. Company executives believed the bid was fair and competitive, and they were confident the community would accept it.

Instead, the bid went to a competitor. The primary reason why? The competing company employed irrigation professionals who were certified, while this company did not.

“The company signed up for our water certification program the next day,” says David Silva, certification programs manager for the California Landscape Contractors Association (CLCA). “If your competition is certified, you need to even up the playing field. It’s becoming less of an ‘extra thing’ and more of a requirement for contractors. It is now the norm.”

While the issue is more imperative in certain states, such as California, more landscape contractors around the country are determining that it is important for members of their workforce to achieve certification in irrigation.

“The industry is trying to take it upon itself to improve the professionalism and knowledge of employees,” points out Sherrie Schulte, certification and education director for the Irrigation Association (IA).

And as the California contractor discovered, more local municipalities are passing ordinances involving publicly-funded projects that companies cannot bid for unless their workforce includes certified professionals.

“If there are certified professionals on a project, the community feels it can be done correctly the first time, in the most efficient way possible,” Schulte says. “There’s no worry that someone else will have to come in after the fact and correct any problems. An inefficient system costs money and, more importantly, energy and water.”

Programs available on national, state levels

IA offers national water certification programs, while CLCA offers similar programs in the Golden State.

The CLCA water certification program gives landscape professionals the tools to map the site a client wants watered, measuring the turf available vs. the number of medium- and low-water plants. The program plugs data into a system that allows contractors to create a water budget.

The IA program includes six different credentials, including Certified Irrigation Contractor. To achieve certification, contractors must hold at least three years’ experience and pass a written exam. For another certification, the Certified Landscape Irrigation Auditor, professionals must pass both a written exam and a field test. All certified professionals must adhere to a code of ethics and continue their education.

Passing either organization’s program gives professionals the ability to become a U.S. Environmental Protection Agency (EPA) WaterSense irrigation partner.

WHY CERTIFICATION MATTERS

Customers, especially those owning or responsible for managing larger landscapes, increasingly demand credentials from irrigation professionals to document competency. Certification provides tangible proof of your dedication to performance and service excellence.

But don’t confuse certification with licensing. Licensing is a government-controlled process that serves as a requirement for functioning in specific professions. Certification is a voluntary credentialing process, which is managed by members of the profession. Industry-based certification provides a set of high standards, consistently maintained, that ultimately benefit the public when developed and managed appropriately.

The benefits of certification include:

- › establishing a recognized standard of knowledge and competency for the financial professional;
- › formally recognizing those who meet these standards;
- › providing employers and clients with a tool to identify skilled, knowledgeable professionals; and
- › supporting the benefits of professional continuing education and development.

By meeting the requirements of certification, you document your knowledge, experience, performance and definition of professional ethics in a scientifically verifiable process. It is this documentation that becomes the credential that employers, clients and peers can use to measure your value in meeting their needs.



“CERTIFICATION INDICATES THAT WE KNOW WE WERE PART OF THE PROBLEM, BUT NOW WE WANT TO BE PART OF THE SOLUTION.”

— Frank Niccoli,
The Village Gardener

Tom DeLany, CEO of ACLS in Fresno, CA, was one of the first 10 landscape professionals to participate when CLCA launched its water certification program in 2007, and the first in the Central Valley region to do so. “People were questioning why I was doing it,” he says. “The Fresno (metro) area wasn’t even on metered water at the time.”

But DeLany looked at it from a business perspective: “I felt that in order to be more professional, we needed to save our clients water.”

ACLS used the certification to launch a certified water consulting service in January, which immediately produced a \$100,000 project at a local children’s hospital. The company refitted nearly 6,000 irrigation heads at the hospital, which pumps its own water. The hospital is expected to see a 30% decrease in water usage, leading to a monthly savings of thousands of dollars on electrical pump costs.



Niccoli points out.

“Clients are becoming more educated,” he says. “They want an expert. Our landscapes last longer because we don’t overwater. We want to partner with our clients to show them how they can save money.”

Of course, overwatering is an environmental issue, and certification allows landscape contractors to make more efficient use of a limited resource. “If you are certified, you have more knowledge on proper lawn and landscape irrigation practices and techniques,” says Mike Temple, project manager for Irrigation Consulting, Inc., in Waxhaw, NC, near Charlotte, who holds several irrigation certifications. “It

Landscape professionals interviewed for this article agree that the industry historically has a reputation of not being good stewards of water. Certification, they note, can help turn that reputation around.

“Our water program changes the mentality that people have of landscape contractors,” CLCA’s Silva says.

Niccoli says a number of water agencies look at landscape contractors as part of the problem. “They thought we were wasteful—and they were right,” he maintains. “Certification indicates that we know we were part of the problem, but now we want to be part of the solution.”

Now, The Village Gardener uses its certification to work with water agencies, sitting on their boards and discussing ways to partner to save water. “Part of that involves plant selection; part of that involves the day-to-day management of an irrigation system,” Niccoli says.

“We would not have been able to get this business if we weren’t able to tout our water certification,” DeLany emphasizes.

Prevent overwatering issues

Likewise, Frank Niccoli, CEO of The Village Gardener, Inc., in San Carlos, CA, looks at water certification as another profit center, with built-in rates of return for the company’s clients. Instead of paying extra money annually to their local water districts as a result of overwatering, he tells clients they can contract with The Village Gardener, which will use its certification expertise to solve the overwatering issue and get them an immediate return on investment.

“It makes sense for the client to invest in water savings,” Niccoli says.

Certification has allowed The Village Gardener to charge more because its service line is of a higher nature. And clients are ready to pay that higher cost,

“IF WE CAN GET OUR CLIENTS TO ABOUT 80% (FROM OVERWATERING PROJECTS 140%), THAT’S A 50% TO 60% DROP IN WATER USAGE. THAT IS ABSOLUTELY HUGE COST SAVINGS. THE CERTIFICATION PROGRAM HELPS US GET THERE.” — Tom DeLany, ACLS



makes you a better steward of water.”

Overwatering brings a multitude of problems. On average, landscape contractors will overwater a project by 140%, according to DeLany. “State of the art means throw more water on landscapes and it will be green next week,” he says. “It might be green, but clients will also have more weeds and crabgrass, and their plant materials won’t grow as well.

“If we can get our clients to about 80%, that’s a 50% to 60% drop in water usage,” he adds. “That is absolutely huge cost savings. The certification program helps us get there.”

From both an environmental and a business perspective, certification makes sense for landscape contractors. Many clients today want to be known as green companies, while at the same time save money.

“You read about it all of the time: ‘We have to save water,’” says Jamie Rust, general manager of ACLS. “Being certified is a good way for us to help our clients achieve that goal.” **LM**

KRIZNER is a researcher and writer with three years of experience writing about topics pertaining to the Green Industry. He lives and works in Cleveland.



It starts in California

What the Golden State is teaching the rest of us about landscape irrigation efficiency and water conservation.

BY **CINDY GRAHL**

RECENT LEGISLATION and weather patterns have made the Golden State a bellwether in reducing landscape water use.

One aphorism of the sustainability movement is that what happens in California — air quality, green building, auto emissions — will eventually spread to the rest of the country, be it in policies or practices. That state recently passed AB1881, or the Water Efficiency Landscape Use Act, which is creating great opportunity in the landscape industry. Key AB 1881 provisions include:

- › minimizing overspray and runoff;
- › creating landscape water budgets;
- › encouraging the appropriate use and groupings of plants;
- › encouraging the use of automatic irrigation systems and schedules;
- › soil assessment and management plans, including landscape maintenance practices, and
- › encouraging use of recycled water.

It applies to new large landscapes and large existing landscapes that must obtain permits.

Rain Bird's 11th annual Intelligent Use of Water Summit this year, held in partnership with the Smithsonian Institution, featured two speakers from California who are respon-

ing to that state's water-scarcity initiatives in ways that could benefit water managers everywhere.

One was Elizabeth Hurst, community outreach and education coordinator of the Inland Empire Utilities Agency (IEUA). The Chino, CA-based regional water wholesaler and wastewater treatment agency supplies imported and recycled water, among other services, to eight communities in Western San Bernardino County, southeast of Los Angeles. Hurst notes the area is traditionally a major center of agriculture that, since the 1970s, has seen many housing tracts built amidst the farmland. Approximately 65% of water there is used for outdoor irrigation.

The IEUA proactively responded to the California drought and the state's legislative response in AB 1881 by gathering municipalities, water suppliers, landscapers and others into a voluntary Inland Empire Landscape Alliance (IELA), a workgroup that wanted to be able to describe low-water landscapes and efficient irrigation, and work toward having both. A rebate-based pilot program resulted in 136 completed landscapes, eliminating 200,900 sq. ft. of grass and saving 26 acre-ft. of water a year. This would be enough to conserve about one-sixth of the regional water supply were these practices carried out throughout the area.

This pilot helped IELA develop a model upon which to draft a regional water-efficient landscape ordinance based on AB1881 and a water budget: the amount of water the landscape is allowed to use, calculated on location, rainfall and size, with adjustments made for using recycled water or having a garden or orchard.

That regional model ordinance was completed in February 2009 and adopted. Other initiatives include use of pervious concrete, storm water permits and a native plant manual.

The manual is a product of the Rancho Santa Ana Botanical Garden, one of the Landscape Alliance partners. Executive Director Patrick Larkin says the passage of AB1881 "has teeth behind it," mainly thanks to the efforts of the IELA. "Cities that do not have the expertise to deal with AB1881 now have a toolbox to use and don't have to deal with it on their own," he says.

Larkin notes optimal water use will be a result of both better system design and the technologies of the system itself. "I am impressed with what Rain Bird is doing," he explains. "Over the years, they have been thoughtful, responsible and out front."

The Botanical Garden's role, he adds, is to help citizens understand both plant choices and local precipitation patterns, such as the fact that the need for irrigation dials back in summer, contrary to much local thinking. "We are not a desert," he says. "We are a Mediterranean climate, and we

have a diverse plant palette." The garden's many educational ventures include work with PBS on a recent series, "Getting Native," which explored low-water landscapes.

One California landscape contractor featured on the series was Forrest Hill, of Swan Drought Tolerant Technology, in which Swan is an acronym for Smart Water Application Now. The five-year-old company is a spin-off of his landscape contracting business, Landscape Design, in Ontario, CA. Hill champions weather-based irrigation controllers as "easy to use," as well as maintenance-free tubing and the use of pozolla, a volcanic product that acts like mulch and releases water slowly. He has used it in drill and fill on two Barstow, CA, ball fields to test its effectiveness, but its use ranges from South Bend, IN, to Bahrain.

Right of way

Also presenting at the Intelligent Use of Water Summit was Paul Goble, director of public works for Indian Wells, CA. His city was focusing on sustainability in the hopes to reduce water use by 60%, or 1.8 million gal./month, with

"IF YOU DON'T HAVE A SKILLED, QUALIFIED, CONSCIENTIOUS INSTALLER, YOU WON'T GET FULL SYSTEM BENEFITS."

— Gregg Gritters, president, Vantage Associates

\$104,000 saved per year. Indian Wells has 23 acres of grass and flowerbeds in its right of way, and the labor and equipment cost for those is now equal to that for shrub maintenance. Water use minimization is the key, he says, and that relies on having a well-trained and certified staff, with work done by licensed landscape contractors, pesticide applicators and a certified water manager.

Irrigation control, says Goble, comes from "proper water pressure, proper sprinkler spacing and heads, and the right amount of water for the right plants." But, he warns, "smart irrigators are needed with the use of smart controllers. These instruments need to be applied and managed correctly."

Smart irrigation controllers, Goble says, are those that get information and reset water use to meet specific climatic conditions. These were installed throughout the city, with 9 million gallons, or 27 acre-ft., saved each year. Steam irrigation with pressure regulation is used instead of spray irrigation, resulting in "better uniformity, an auto-match to precipitation, even after arc and radius adjustment, and reduced runoff on slopes and tight soils."

Indian Wells works with Vantage Associates, Bermuda Dunes, CA, as its landscape contractor. Vantage's president, Gregg Gritters, is certified as a California Landscape Irriga-

Elizabeth Hurst, standing, credits the broad-based Inland Empire Landscape Alliance with significant water savings.



tion Auditor, a Certified Water Manager of the California Landscape Contractors Association and Rain Bird's Maxi-Com Level 2.

Gritters notes evapotranspiration (ET) sensors that measure water lost from the soil surface and from the plant, which are tied into local weather stations, should allow installers to select the weather station to use, not those “based on zip codes.” In his area, he says, that’s important — ETs can vary up to 30% in one location, so precision is needed.

Goble adds other water-reduction methods need to be used in addition to irrigation technology in an integrated approach. Technology alone is not enough. Soil is also treated with worm castings and palm mulch to reduce water use by 15%.

Indian Wells credits its stream heads and the smart controllers each with 25% in water savings, and the overspray and pressure regulation with 5% each, for a total of 60% savings on water — which amounts to a net of \$8,700 monthly. The city won the 2009 Rain Bird Intelligent Use of Water-State of the Union Award for its use of smart controllers, as well as recognition on its reduction of the use of electricity.

Training needed

“Savings are often due to past abuse,” adds Gritters. “The new equipment makes changes in water use, for sure, but a

smart irrigator can optimize any existing system. If you don’t have a skilled, qualified, conscientious installer, you won’t get full system benefits.”

In agreement with Gritters is one landscape contractor who closely followed the IELA initiative and the development of AB1881 in general. Robert Wade, owner of Wade Landscape, Chino Hills, CA, served on the study group for the new law and is a member of the California Landscape Contractors Association with Water Manager Certification. “We have been heavily involved in this,” he says. “The technology of smart controllers is good, but when things go wrong, the contractor needs to know what to do. Contractors aren’t as well trained as they have to be. We can’t go by what we’ve always done.” Planning,

he adds, includes thinking about root depths, clock settings and precipitation rates — a whole lot more than before.

“You don’t panic, and you don’t look for quick fixes,” he says. “Landscape contractors need to come up to speed and get on track. We need to become the good guys and help save water.” **LM**



**“WE NEED TO
BECOME THE
GOOD GUYS
AND HELP
SAVE WATER.”**

— Robert Wade



GRAHL is an experienced researcher, editor and business writer who lives and works in Cleveland, OH.

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

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

and the Chicago White

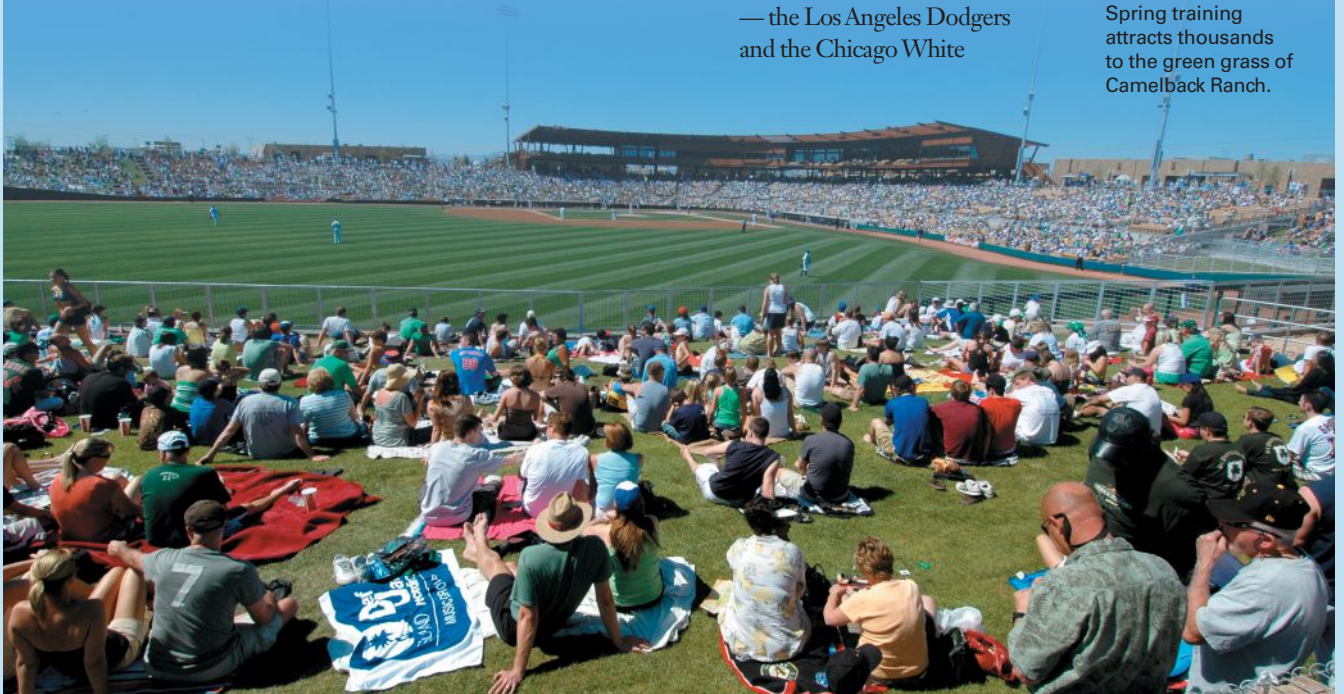


PHOTO COURTESY: CAMELBACK RANCH

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

PHOTO COURTESY: CAMELBACK RANCH; ILLUSTRATION BY: STOCK INTERNATIONAL INC.



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." **LMI**