>> **YOUTH ACTIVITIES** keep the fields booked non-stop from spring to early winter. Subsurface irrigation is often run while games are underway.

Sports complex finds water management solutions with dripline

Editor's note: *This article was supplied by Creative Services, Encinitas, CA.*

SPORTS FIELD DESIGNER DOUG ROCKNE likes to tell the story of the soccer mom who praised the grounds crew at the Arapahoe Park and Recreation District, just south of Denver, because the turf looked so good last summer, even though the fields were never irrigated.

Could they give her husband some tips?

"'Thanks,' said the crew, 'but we've got a professional secret. The turf is frequently irrigated, even when games are going on, but no one ever notices.

"'It's all underground . . . through driplines. We can irrigate any time of the day or night.'

"And that's one of the key reasons we've installed dripline on Arapahoe's sports fields over the last 10 years," said Rockne, ASLA, president of Rockne Corty Design of Centennial, CO. Located at the top of the nation's watershed, the 12.5 square-mile Arapahoe Park and Rec District has the majestic Rocky Mountains as a back-

>> Top left: NETAFIM DISTRICT SALES MANAGER KELLY KEICHER (LEFT) and project landscape architect Doug Rockne (right) review turf conditions during the dry summer months.

>> Bottom left: PEAKVIEW PARK NORTH is one of a series of community parks that comprise the 12.5-square mile Arapahoe Park and Rec District, just south of Denver.

>> Bottom Right: THE ARAPAHOE PARK AND REC DISTRICT has 100 acres of developed parks, including playgrounds alongside the sports fields.

drop. However, in this High Plains region where rivers are born, ground water is scarce. Lifeline water taps (the right to connect to water mains) and monthly water costs are pricey.

Rockne started working on this massive recreational project in the 1980s. He developed the District's original master plan and continues to function as lead designer and advisor to the board of directors. From the beginning, he knew he had to approach the site's water use with innovative thinking.

"With the Rockies nearby, you'd think we'd have plenty of water. But this is a semi-arid desert environment. We're at 6,000-foot elevation with 15 inches of precipitation a year, and heavy clay saline soils.

"A couple of our first fields were installed with traditional overhead sprinklers, but all the rest are dripline."

This high-use recreation area was designed to serve the fast-growing communities outside Denver and demand for sports fields grew exponentially during the housing boom.

"Local communities were clamoring for fields for all ages, all genders, all sports, and they are typically booked solid from March through November," said Rockne.

Today the Arapahoe complex is nearly 90% built out and has an envy of amenities: 100 acres of developed parks, 500 acres of open space, 14 miles of trails, 75,000 square-foot recreation center, gym, indoor skate park, and a multi-plex of natural turf sports fields.

"There's a reason Colorado is one of the healthiest states. Everyone's outdoors playing sports," said the field designer.

Over the past 6 years, the district has installed Netafim Techline CV dripline on three baseball fields, two softball fields, one football field, four soccer fields (two as large as three acres) and several multi-use fields. By specifying dripline systems, the planning team was able to maximize water use while minimizing costs.

"Our challenges included both fiscally-sound start-up costs and responsible management of water use per acre," said Rockne. "Dripline has helped us achieve those goals and the District has always been able to operate in the black."

WATER DIRECTLY TO THE ROOTZONES

"Dripline delivers a precise amount of water directly to the rootzones without wasting a drop," said Kelly Keicher, Netafim district sales manager for Colorado.

"This area has low humidity and dry mountain air. Overhead irrigation loses too much water to evaporation and wind drift in these conditions.

"We've shown that dripline is 90% efficient when compared to overhead irrigation, which is generally around 60% efficient," said Keicher.

The Arapahoe District management recently conducted a comparison of monthly water costs between a sports field with dripline and an older sports field with over-

>> NETAFIM TECHLINE CV DRIPLINE was run in lateral rows with approximately 14 inches between each line of tubing. The tubing was set in place with an automated Vermeer insertion plow.

head sprinklers. The comparison was done in May, a high usage month.

Arapahoe Sports Park A is a 4.7-acre site irrigated with a traditional overhead system. The field used 437,000 gallons of water or 92,979 gallons per acre in May.

Arapahoe Sports Park B, located nearby, is a 9.34-acre facility primarily irrigated with Netafim dripline (with overhead sprays in limited areas). During the same month Sports Park B used just 59,529 gallons per acre. Even though Sports Park B (with dripline) is twice the size of Sports Park A, it used just half the water.

The district found there were lower maintenance costs as well. Because the system is not visible, mower damage and vandalism are no longer problems and repair work is at a minimum, with no moving parts or heads to replace.

Wind was another area concern, but with dripline there is no water loss on gusty days.

"We've found that dripline also increases playability and safety on the fields. It softens the soil and eliminates compaction, which is problematic with clay. Overhead sprays often compact a field even more, making it tough on injuries," said Rockne.

INSTALLATION ON SPORTS FIELDS

Overseeing field conditions is landscape professional Chris Willis, president and founder of Colorado Total Maintenance, Inc., a landscape management firm based in Denver.

Willis has worked with Arapahoe Park and Rec for 10 years and currently handles maintenance for the entire district. He has installed more than a dozen multi-use and baseball fields with dripline and has become an authority on sports field subsurface irrigation. His expertise is well known and he has led regional seminars on dripline installation for designers and contractors. "Arapahoe's Piney Creek Hollow Park is one of our recent projects," he said.

"It's a 4-acre athletic field with 16 zones controlled by a Hunter IMMS Central Control system. We installed the dripline in an 'open excavation method' by removing the top four inches of the soil, laying down the pipe and placing the dirt back on top. We ran the main supply header in the middle of the field going east to west."

The 17mm-wide dripline laterals were spaced 15 inches apart in 150-foot runs heading north and south. The irrigation coverage per zone was 5,500 square feet.

Willis integrated a minimal nitrogen, plant-based organic compost into the soil to create a sandy/loamy surface.

"This amendment has excellent water-holding capabilities. With dripline, the soil needs to retain the water to its maximum capacity for efficient coverage, yet be able to drain," he said.

The site was then sodded with a hardy high-use athletic field mix from Graff Turf Farms.

SETTING UP THE IRRIGATION SCHEDULE

The important first step in setting up a dripline irrigation program is to initially saturate the field so that it's like a sponge, said Willis.

"We ran the irrigation for 24 hours straight until the field reached its saturation level.

"I have a tried-and-true method to determine when the right point is reached. I walk the field with shoes off and sink my heels in between the driplines to check the softness. Once we reach the right saturation point, we're good to go with the irrigation schedule."

The Piney Creek Hollow irrigation program runs three times a week using a cycle and soak schedule. Each of the 16 zones operates for 8 hours in 6- to 8-minute cycles at .4 gph (gallons per hour). At the end of the 8-hour program, each zone has had 45 to 55 minutes of precipitation.

Because the fields are so used and abused, the District has established ongoing rejuvenation programs. Overseeding and topdressing are scheduled spring, summer and fall and all fields are typically slice-aerated three times a season.

Among the site challenges have been slope irrigation and the occasional dripline repair.

"Even with built-in check valves, we've learned to adjust the scheduling to maintain even distribution from top to bottom in sloped areas," said Willis.

"As for repairs, sections of dripline have had to be replaced a few times, but it's been the coaches and parents at the 'root' of the problem. They'll pound volleyball net stakes or soccer goals into the ground, not knowing the irrigation lines are right beneath."

Lynn Cornell, manager of the Arapahoe Park and Recreation District, has been pleased with the success of the irrigation team.

"They demonstrated that sports fields could be irrigated very efficiently with dripline yet still maintain playability. The District has reported significant savings, based on water bills," he said.

"It's been a win-win for all teams involved in the project." ■