MAGNATION®
WATER TECHNOLOGIES · MADE IN USA

CASE STUDY

BLACKHAWK COUNTRY CLUB SAVES 10% ON IRRIGATION A YEAR WHILE IMPROVING TURF QUALITY

OVERVIEW

Located in the rolling hills of Danville, California, Blackhawk Country Club is challenged each year with a long period of very little or no rainfall. In the mid to late season, Fairway 3 on the Lakeside Course begins to thin and brown.

To remedy this problem, STS Turf Technical Director Brad Snavely conducted a study utilizing Magnation Water Technologies beginning in May 2018.

Snavely's findings are both fascinating and important for golf courses and sporting facilities around the world— as they work to maintain healthy turf, cut down on water usage, and counteract the negative effects of recycled water.

PROBLEM

Blackhawk Country Club is a prime example of a golf course fighting to survive in a drought-ridden, dry climate. During the summer, it is common for there to be little (if any) rainfall to supplement watering efforts.

Additionally, reclaimed water is used. While reclaimed water plays an important role in conservation, it can be quite damaging to turf. Increased levels of salt and minerals can often lead to buildup, making it almost impossible to move water to the roots and into the soil. This leads to soil compaction, lack of gas exchange, diseased, and dying turf.

SOLUTION

To prove that the Magnation Water Treatment System is highly beneficial for golf courses and sporting facilities in arid regions, Snavely coordinated with Blackhawk Country Club's Superintendent Thomas Sheehan to conduct a carefully monitored case study.

Beginning in May 2018, three 2" fairway lateral irrigation lines were exposed with a 2" Magnation PVC Aquabolt, installed on the center line, and 2" Rainbolt units were installed on each side of the Aquabolt to treat lower Fairway 3.

The Magnation Aquabolt is approximately 30-inches long and causes water to pass first through a magnetic field. It then runs through a static mixer and then through a second magnetic field. The Rainbolt is about 6-inches long and allows water to pass through a single magnetic field. When this occurs, this causes a "rifling effect," which causes water to best receive Extremely Low Frequency (ELF) energy that is then emitted into the water.

When this occurs, profound things begin to occur:

(1) The magnetic field works to off-set the effects of friction and breaks-up clumping water molecules.

(2) Flow rate is increased and surface tension reduced, which results in nan-bubbles.

(3) Water filtration and percolation significantly improve.

(4) Water becomes readily bioavailable, increasing absorption rates into the soil and turf.

(5) Water residue/scale is broken up and prevented.

RESULTS

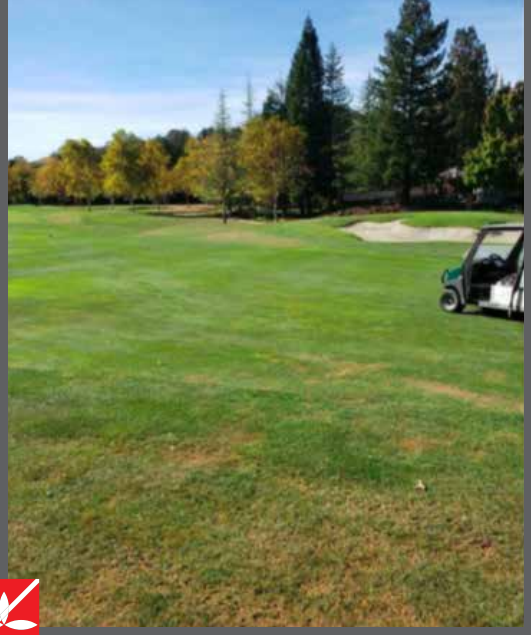
The Magnation system was installed in May of 2018 and approximately 45-60 days into the case study, the treated area received 10 percent less water than the untreated area throughout the trial. All other fertility and cultural practices remained the same in both areas.

In late June/early July, there was also an apparent difference in treated and untreated areas. There was extensive browning in the untreated area, the transition area that received both treated and untreated water reflected less browning, than the 100% treated area.

By August 2018, the Magnation treated area indicated more efficient movement of water and the concentration of salts driven deeper in the root zone. The following Electical Conductivity (EC) readings reveal the levels of salts found at the surface.

	May 10	July 5	Aug 9	Aug 29	Oct 5	Nov 1
Treated EC	0.525	0.511	0.700	0.933	1.344	1.089
Untreated EC	0.536	0.739	1.040	0.990	2.030	2.020

The data shows that as time progressed, the untreated areas saw an increased level of salts at the surface in relation to the Magnation treated area. The following photos reveal the untreated area versus the treated area (see next page).



The Untreated areas above illustrates loss of rye overseed due to Rapid Blight pressure and end of season high salinity conditions due to the use of recycled water. Picture taken Nov. 1, 2018

** Note: all photos provided by STS Turf, with no Photoshopping.*

This picture was taken Nov. 1, 2018 at the same time as the previous pictures and reflects the Magnation Treated area in lower Fairway 3 with very little if any disease pressure as compared to the Untreated area.

Finally, the following observations were made over the seven-month testing period:

1. The extractable soil data reflected elevating constituent levels as water was reduced by 10% on the treated side, but with no visual detriment, indicating the water could be more available, which prevented the plant from wilting.
2. Electrical Conductivity declined on the Treated side providing more consistent data July through November as compared to the Untreated area. This may have been the result of reduced surface tension and improved water infiltration and percolation rates.
3. Solubility of nutrients was typically higher in the Treated area as compared to the Untreated area.
4. It could be speculated that ELF stimulation of aerobic microbial activity and the induction of nano-bubbles through the Treated irrigation water during a period when cool season turf realizes lower respiration rates due to excessive temperatures may have assisted the plant with improved stress tolerance and the ability to breathe.
5. The hand-held EC readings were 25% lower in the Treated area as an overall average. Visual benefits from less browning out over drain lines, quicker and greater percentage of over seed germination and establishment, deeper roots with more mass, reduced disease pressure late in the season provided a very positive outcome of this Magnation-Blackhawk Country Club case study.

CONCLUSION

Magnation is an ideal solution for golf courses in areas with little to no rainfall. In the case of Blackhawk Country Club, not only did the technology decrease water usage in the treated areas by 10 percent, it reduced the need for wetting agents, promoted aerobic activity within the soil, and left the turf green and lush.