Reclaimed Water Presents Challenges

BY **ROB KERRIGAN**

RECLAIMED (OR REUSED OR RECYCLED) WATER IS PLAYING AN INCREASING ROLE IN GOLF COURSE IRRIGATION. GOLF COURSES THAT ARE NOT USING RECLAIMED WATER NOW WILL LIKELY BE USING IT IN THE FUTURE AS FRESH WATER SUPPLIES CONTINUE TO EXPERIENCE THE STRESS OF A GROWING POPULATION.

Unlike potable or tap water, reclaimed water has a few challenges associated with its use. For example, courses may be required to restrict access to areas on the course near reclaim water irrigation ponds, strategize on turf irrigation and turf selection, and consider the effect reclaimed water can have on you irrigation system components.

These challenges can have significant effects on course appearance, budgetary considerations, and irrigation system life.

Not all reclaimed water is created equal. There are different types of reclaimed water, and regulations and/or guidelines stating the locations where the different types of reclaim can be utilized. So this is an overview on the potential challenges that could be experienced with the use of reclaimed water.

Reclaim regulations and guidelines can prove nebulous and vary greatly from state-to-state. *First, there is no federal regulation or law governing reclaimed water quality.* The Environmental Protection Agency (EPA) promulgates guidelines for the reuse of water; however these guidelines are not legal requirements.

State governments retain the power to regulate reclaimed water quality. Most states have either regulatory requirements or guidelines for reclaim in place. Per the EPA's guidelines, only Connecticut, Kentucky, Louisiana, Maine, Minnesota, Mississippi, New Hampshire, Rhode Island, and Virginia have neither regulations nor guidelines regarding reclaimed water.

Not all states that have reclaim regulations in place regulate the same parameters. For example, Arizona has a three-tier system for regulating and classifying reclaimed water. Class A (highest grade) is for unrestricted urban use. Class B can be used for golf irrigation and other restricted access landscapes. Class C can only be used for irrigation of non-edible crops.

What separates one tier from the next are turbidity and fecal coliform specifications. In Arizona, Class B (restricted access landscapes) has a higher allowable fecal coliform concentration than Class A (unrestricted urban use). 1 A course using Class B reclaimed water may desire to restrict members' access to certain areas of the golf course.

Absent from the Arizona reclaimed water regulations are pH band requirements or salinity specifications. So although Class B reclaim is used for golf irrigation and meets state Class B regulatory requirements, it may have a pH and/or salinity levels that damage golf course turf and/or irrigation system equipment. This damage can result in unexpected costs for the golf course and its membership.

Salinity is one of the most important parameters in determining whether or not water is suitable for irrigation purposes. Humans have known this for thousands of years. According to historical legend, the Romans salted the Carthaginian farm fields at the conclusion of the Third Punic War to ensure Carthage's annihilation. The salinity levels of the reclaimed water delivered to your golf course vary and can result in turf damage.

The course superintendent knows that can be mitigated by leaching (application of irrigation water in excess of turf requirements to ensure the downward movement of water and salt away from the root zone), and by selection of salt-water tolerant turf varieties.

The irrigation system equipment bears consideration as well. Portions of the irrigation system are susceptible to a greater rate of corrosion than would otherwise be experienced when using potable water. This results in unexpected repair or replacement costs.

The typical irrigation system's pump station utilizes steel piping to achieve the desired rigidity and hydrostatic performance. This same steel piping will likely also experience a greater rate of corrosion when exposed to reclaimed water. Golf courses could avoid this by purchasing a stainless steel or HDPE (high density polyethylene) pump station. However, such options can prove cost prohibitive.

A cost effective method to mitigate the corrosive effects of reclaim is to request that the pump station's skid and piping are painted top to bottom, inside and out. Industrial liquid paint coatings or polyester powder coat paints work well; however, polyester powder coating tends to perform better than its liquid paint counterparts in this area.

As the solvent evaporates from liquid paint, it leaves behind small cavities. These cavities provide a pathway for the corrosive agents in reclaimed water to penetrate the paint more quickly and access the metal itself. On the other hand, powder coat paint melts down as it is cured at high temperature; no such cavities are formed during this process. This results in better corrosion protection at a price comparable to that of liquid paint.

Reclaimed water is the future for golf course irrigation as finite fresh water supplies support continued growth. It does bring with it a number of challenges for golf course professionals.

Reclaimed water regulations will dictate the quality of the reclaim water a golf course receives. The quality of the reclaimed water being delivered to a golf course should be considered when making decisions regarding restricting access in certain areas on the golf course, turf selection and irrigation strategy, and irrigation system components. Such consideration will help keep golfers safe, ensure the best possible turf conditions, and help avoid unexpected repair or replacement of irrigation system components. **BR**

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