

## IRRIGATION ISSUES A SALTY OPTION



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For those of you who remember the '80s and early '90s, the first thing a golf course design firm would ask a prospective client was simply, "Do you have the enough land and financial capability to build a golf course?" Today the first question is the above and, "Do you have the quantity and quality of water needed to support a golf course?"

Water certainly has become the most important factor in, not only building new courses, but sustaining existing ones. There are hundreds of courses around the U.S. that 30-plus years ago had an abundance of water – whether that source was groundwater, rivers or lakes – or in some cases potable water, which in some regions has become a public relations challenge.

What happened to all the water? Statistics state the same water that was on the earth billions of years ago still exists today and covers most of the earth. However, only 3 percent is fresh water, and most of that is in the form of ice. Today, less than 1 percent of all water is readily accessible for human use, and less than 0.007 percent is available and suitable for drinking.

In the 20th Century the world's population tripled, but the use of water grew by a multiple of six. It's been said that we could run out of usable water before we run out of oil (my friends in West Texas might argue against that, but I digress). Therefore, we have to act responsibly when using this resource and use it wisely.

Today, governing agencies in many states are restricting water use from the very sources that we generally depend on. Throw in a drought situation, and these sources can be severely limited by those governing them. The first uses typically restricted are light industries, like car washes, but then parks and golf courses enter the fray.

We are certainly in a time when it is important to find alternative water sources to sustain golf for the future. Just a few years ago, effluent water was free; municipalities and water treatment facilities just needed to find a home for this source. Now this water is becoming a tight commodity and in many places can be quite pricey (if accessible). I guess someone discovered a profit center . . .

So what are our options? The only remaining option is to turn to water no one else wants – like brackish water found in wells in certain parts of the country and salt water from the ocean itself. Breakthroughs

in new salt-tolerant turfgrasses for warm season areas, such as Seashore Paspalum (*Paspalum vaginatum*), are enabling us to use water sources that we wouldn't even have considered 10 years ago. It should be noted that these grasses may not be the end all, but they give courses another vital option not previously available.

Because this is more about irrigation, I will leave the soil chemistry to agronomists and concentrate on information about water resource options. Let's start with the worst case scenario – using sea water.

Typical sea water has a salt content of 34,560 ppm. Obviously no turfgrass can handle straight sea water. So what are our options? The first is to blend sea water with fresh water, and you should definitely consult the previously mentioned agronomists to determine if this is practical.

Willie Slingerland with ITT Flowtronex states... "Another option is reverse osmosis, also known as RO. In many coastal areas today, like the Caribbean and desert areas in Egypt, have turned to RO. The greatest positive of RO is that virtually most any quality of water can be turned into an usable drinking and irrigation source. However, this type of treatment comes at a very healthy cost."

Slingerland went on to say that: "Using reverse osmosis involves the initial equipment purchasing cost required to pull from the source, pre-filtration, the RO unit(s) and the cost of the pump system for distribution through the irrigation system. Then, there is the disposal of reject material, operating cost for electricity and maintenance, which can run into the hundreds-of-thousands-of-dollars per year."

"In addition to production and maintenance costs, there are other factors to consider. RO water is very pure; the RO process removes all minerals and metals from the water. When this pure water source comes into contact with metals in pumps, station piping and irrigation fittings, it wants to pull these metals back into the treated water, causing corrosion in an irrigation system. Your pump station also can be exposed to salinity in the air, which can add cost to the typical station."

Reverse osmosis could be a viable solution, but do your homework first and consider all of the costs and side effects attached to the process. Whatever your situation, tap into experts to find a solution that best fits your budget needs, resources and site conditions. ■