Developing the Infrastructure for Reclaimed Water at Sand Creek Station

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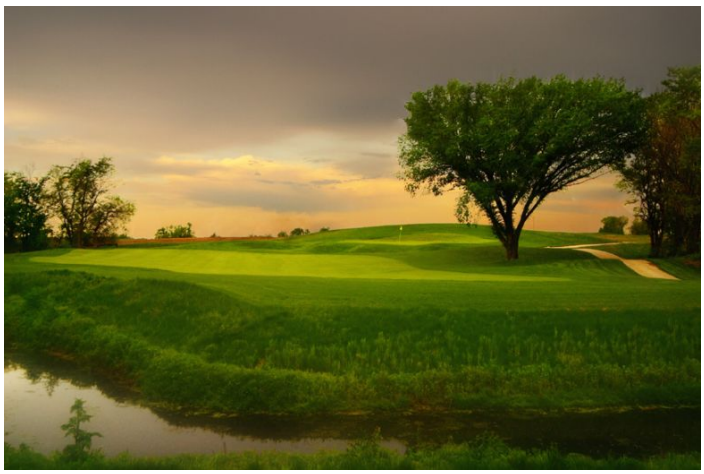

Sand Creek Station is a Jeff Brauer designed public golf course owned by the City of Newton and opened in July 2006. It features bentgrass greens, tees, and fairways. Sand Creek has received several awards including Golf Digest's "top 10 courses to play under 75 dollars." The course is surrounded by a 560 lot subdivision. The land developers donated the land for the golf course, contributed $600,000 and $2,400 per lot sold to the City of Newton to help pay for the construction of the golf course. Also, the city uses a portion of the new taxes generated by the new homes to help pay the costs of constructing the golf course.

The city, including the golf course, is located in a part of Kansas, where water use, water quality, and the water levels of the underground aquifers are important. Specifically, the Equus Bed Aquifer is an important source of water to many cities in the area including Wichita. Current water use practices and recharge of the aquifer to meet future needs are important items to be considered by the cities.

In 2003, city leaders approached Representative Todd Tiahrt about obtaining a grant to help offset additional construction costs for the access and infrastructure to use reclaimed water. Other options for a water source would have been drilling wells or tapping into the city water supply. The City of Newton received approximately $450,000 from a federal grant for the construction costs to install the supply line for the reclaimed water to the golf course. The monies were secured through a State and Tribal Assistance Grant (STAG), earmarked through the VA/HUD bill, which was wrapped into the Omnibus signed into law January 23, 2004. Using the reclaimed water for irrigation provided both a means of effluent water disposal for the city and a source of water for the golf course, where turfgrass could help to filter the effluent water.

Sand Creek Station receives the reclaimed water for irrigation from the city's wastewater plant. The wastewater plant is located about ¾ mile north of the course. Contractors had to install an 18-inch line with 14-feet of head from the wastewater plant to Sand Creek Station Golf Course. The city can supply 1.2 million gallons of reclaimed water per day to the holding pond on the course which has a 3 million gallon capacity.

Purple pipe and purple valve boxes were required when constructing the irrigation system. Other requirements for using reclaimed water included:

- not filling the lakes or ponds on the course from the irrigation system
- part circle heads must be used around the lakes
- access to the area must be restricted during irrigation except for hand watering
- the fecal coliform levels in the water must be sampled twice monthly
- signs must be posted on the course noting the use of reclaimed water.

Sand Creek Station does not pay for the reclaimed water and has an ample supply. However, the water coming into the holding pond has a pH of 9.0 along with high levels of salts and bicarbonates. A sulfur burner was installed during construction that can lower the pH to 6.8-7.0 and reduce the levels of bicarbonates and salts in the water. However we have had problems with the unit not burning the sulfur properly.

The course has approximately 100 acres of irrigated turf. During the summer of 2007, we noticed black layer forming around drains in the fairways and on greens where surface drainage is poor. We core aerate the greens in the spring and fall and will use 8 mm needle tines during the summer to help these areas out as needed. The reclaimed water also has high levels of nitrate. In fact for every one inch of irrigation water applied, we get an estimated .1 lb N per 1000sqft. This does cause excessive growth and must be taken into account when planning the fertility program. We have had great results using Primo to slow growth on greens, tees, and fairways.

In an area where water rights can be difficult to obtain, purchasing municipal water can be expensive, and water conservation is important – using recycled water is a good solution. Coordinating the development of the necessary infrastructure with community leaders, congressmen, and others helped to provide this solution. In addition, Sand Creek Station's use of recycled water helps to protect an important underground aquifer. Using recycled water presents its own set of challenges for golf course maintenance, but it provides many benefits as well.