

application	Municipal Wastewater Treatment Plant
location	Moss Creek Plantation, Bluffton, SC
product	Geotube® Containers

THE CHALLENGE

Moss Creek Plantation is a picture-perfect golf course community of 980 residences in the low country of South Carolina. The Moss Creek Owners Association (MCA) owns and operates Water Oak Utility, which treats about 450,000 gallons per day. The utility also contracts with Beaufort-Jasper County to treat some of their waste stream. James Buckner, Utility Operations Manager, operates two activated sludge treatment plants, the oldest started in 1990, the newest in 2002. Digested sludge has traditionally been dewatered in five 100' long x 20' wide sand drying beds.

Wet winter weather, which may last for two months at best, or five months at worst, prevented the use of the drying beds during this time. In the summer months, James Buckner can "pull a bed" every week and if the winter is dry, he can "pull a bed" every two weeks. The problem arises when there is a wet winter,

which extends the drying time in the beds up to a month.

THE SOLUTION

Ron Kolat with Carter & Sloope Consulting Engineers, recommended Geotube® containers to contain and dewater the digested sludge. Geotube® containers, which are produced from high strength polypropylene fabric, are designed to allow effluent water to escape through the pores of the fabric while retaining the solids. Positive pressure in the tube limits rain water from seeping into the bag. This allows the Geotube® to continue to dewater even during the wet winter months.

James placed the first Geotube® dewatering bag in one of the 100' long sand drying beds and began dewatering sludge in February, 2003. He subsequently added four more 37.5' circumference x 90' long Geotube® containers to the other four drying beds and alternated the filling process in each tube. James

dewatered 407,786 gallons of sludge at 2% solids in the first Geotube® container by July 2003, when he took it out of service. He allowed the filled tube to remain in the bed until October 2003, at which time he opened it and removed the solids. A sixth container was added replacing the first one. This tube continues in service with over 540,000 gallons of sludge being dewatered after five months. Over a twelve month period, James dewatered 730,000 gallons in Geotube® container number 5 which is still in use.

PERFORMANCE

The start up on the Water Oak Utility Geotube® dewatering project presented some challenges. The chemical conditioning of the sludge, a key element in the dewatering process, was not delivering the most efficient floc. As a result, the cake solids in the first Geotube® container were lower than expected. After the tube was cut open, the sludge



Water Oak Utility Wastewater Treatment Plant treats 450,000 gallons per day.



Water Oak Utility saved over \$33,000 dewatering with Geotube® versus liquid hauling and dewatering on the first Geotube® installed.

continued to air-dry before the solids could be removed. However, Utility Operations Manager, James Buckner was confident that Geotube® technology would provide the best alternative for dewatering sludge. James worked with his polymer supplier to improve the chemical conditioning and to achieve a better floc by rearranging the injection point for the polymer. He also inserted a sample tap close to the fill port on the Geotube® container. James asserts that the sample tap is key to making sure the sludge is properly conditioned before it goes into the container. As a result of his perseverance, James says “dewatering has gotten better every time we’ve pumped into them”. The utility saved nearly \$33,000 over liquid hauling and dewatering at a remote site on the first Geotube® alone, even though cake solids were lower than expected. With improved chemical conditioning, James has been able to dewater almost twice the volume in successive Geotube® containers. In 19 months, over 3,000,000 gallons of sludge have been dewatered in six Geotube® containers at Water Oak Utilities Wastewater Treatment Plant.



In 19 months, over 3,000,000 gallons of sludge have been dewatered with Geotube® technology.



Five Geotube® containers were installed in series to allow one to be removed while four were in operation.



730,000 gallons of sludge at 2% solids have been dewatered in Geotube® #5 which is still in use.



Proper polymer mixing and injection helps to provide good chemical conditioning.

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