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Wintertime Biosolids Dewatering with Geotube® Containers in a Drying Bed

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Objective

Facility managers at this Kentucky wastewater treatment plant used Geotube® dewatering technology to get the plant through the winter months when their drying beds do not perform well. They were often struggling when the plant was near capacity with biosolids. The objective was to pump biosolids to a Geotube® container in one of the existing drying beds. The Geotube® container increased the volume of material which could be placed in the existing drying bed. The managers liked the simplicity and economical cost of the system, which involved the purchase of a Geotube® container and a supply of polymer.

WaterSolve's Chemical Conditioning

A representative sample of the biosolids was tested at the WaterSolve LLC lab and the results revealed this would be a good application for Geotube® dewatering technology. Dewatering polymers were evaluated based on water release rate, water clarity, and flocculent appearance. In addition, dosing rate(s) were determined during bench-top dewatering experiments and recommendations provided to the facility during this phase of the program. Solve 216B was the recommended polymer for dewatering this residual in a Geotube® container.

Geotube® Container Sizing

Geotube® containers are manufactured from high strength polypropylene fabric and designed to allow effluent water to escape through the pores of the fabric while retaining the chemically-conditioned solids. A Geotube® estimator indicated 125,000 gallons of the 4% dry weight solids, drying down to 15%, could be dewatered and stored in a 45' circumference by 57' long Geotube® container.

The Result

WaterSolve LLC sent a Geotube® container and a supply of Solve 216B emulsion polymer to the facility. The tube was laid out in one of the existing drying beds. The Solve 216B was plumbed to the facility's chemical feed system which injected the polymer into the material prior to being pumped into the Geotube® container. The facility manager was happy to see the Geotube® would hold several times more biosolids than he was normally able to place in the drying bed. The Geotube® and polymer were cost effective and solved the overload issue for the winter season when the drying beds were inefficient. The manager further remarked he planned on purchasing more tubes in the future to deal with the wintertime overload problem.



This is the raw sample of biosolids.



The biosolids, treated with Solve 216B.



The 150-mL sample of biosolids was treated with Solve 216B then poured onto a Geotube® filter. The filtrate water is on the left and the resulting cake was collected at the end of 1 hour. The cake tested 6% dry wt. solids.