



Dewatering Wastewater Residuals in Existing Drying Bed

Case Study Summary

This wastewater treatment plant in Michigan chose a Geotube® system to dewater the wastewater residuals. The Geotube® container was fabricated to fit in the existing drying beds at the facility. WaterSolve LLC was contracted to provide the equipment, products, and training to install the system. This application of Geotube® dewatering was installed to provide additional capacity during a period that the weather conditions limited the ability of the contracted sludge hauler from land application. The client was pleased with the results and Geotube® technology allowed this municipality to provide the necessary storage and dewatering until normal sludge handling and storage operations resumed.

Objective

The objective of this project was to process and manage the wastewater residual to pass a paint filter test for subsequent land application. A sample of the wastewater residual was tested the WaterSolve, LLC laboratory and tests revealed this would be a good application for Geotube® dewatering technology. A Geotube® container fabricated to fit into the existing drying beds and polymer feed system were installed in February of 2011 to manage residuals as a cost effective dewatering method in order to accommodate the additional volume of residuals during a period of wet conditions in which it was not practical or permitted to land apply the residuals.

Conditioning Chemical

A representative sample of the wastewater residual was tested by a WaterSolve technician. 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 137 was the recommended polymer for dewatering this residual into 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. Based on field measurements, a 60' circumference x 57' length Geotube® container would fit into the drying beds.



The Result

WaterSolve LLC was contracted by the facility to provide 60' circumference by 57-ft long Geotube® containers, a polymer make-down and injection system, and technical support during the start-up of the system. The initial Geotube® container was placed inside an existing drying bed. A polymer make-down unit was plumbed into the piping designed to transfer the residuals to the drying beds. A drum of Solve 137 emulsion polymer was plumbed to the make-down unit. A sampling port near the Geotube® provided visual samples of the floc to determine changes needed to the polymer feed rate.



The existing sludge drying beds are in a covered, but open, structure. A Geotube® container was placed in one of the drying beds as shown above.



A sampling port was installed just prior to the Geotube® container.



The Geotube® container during filling and dewatering operations.