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Dewatering Residuals from Water Treatment Plant

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Objective

Sediments within the second stage of a three stage lagoon system had accumulated over the seventeen years of existence at the WWTP in Ohio. Biosolids were breaking through to the third stage and short circuiting the system. Facility managers searched for supplementary dewatering options including rental of a mobile belt filter-press and Geotube® containment and dewatering. The objective was to process and manage facility residuals in a cost effective and efficient method without taking the lagoon off-line. A Geotube® container was evaluated via a full scale pilot study in 2006 to process and manage facility residuals from the second stage lagoon as a cost effective and efficient method with minimal processing time.

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. The lay down area at

the site was limited to the banks of the lagoons. A 100 ft. length of 60-ft circumference GT500 Geotube® container was the largest size that would fit on the lagoon bank.

WaterSolve's Conditioning Chemical

A representative sample of the second stage lagoon residual was collected and sent to the WaterSolve lab for testing. 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. Polymer(s) that flocculated and dewatered these residuals most effectively were re-evaluated with lower doses in order to isolate the most efficient dewatering and flocculating polymer. Solve 215D was the recommended polymer for dewatering this residual in Geotube® containers. WaterSolve recommended using Solve 215D at a dose rate of 200 ppm in order to achieve passing of a Paint Filter Test and excavation to a landfill.



Inside this issue:

Location: Ohio

Products: TenCate™ Geotube® Containers
Solve 215D- Polymer

Equipment: WSLP-2400 Polymer Make-down



Dredged influent water on left. Effluent from Geotube® container on right.



One hundred ft. 60-ft circumference Geotube®



WSLP-2400 polymer make down unit for blending and calibrating polymer feeding rates.

The Result

The dredging contractor and WaterSolve were contracted by the facility to hydraulically pump and dewater the sediments into 100 ft of 60-ft circumference Geotube® container located on the bank of the lagoon. A WSLP-2400 polymer make-down system with a 10-gph high viscosity chemical feed pump were used to facilitate mixing/activation of Solve 215D polymer with water (1:200). A 2-inch fire hose was used to deliver

make-down water from an onsite wet well to the WSLP-2400 at approximately 100-gpm and 100 psi. Made-down polymer was injected into the 4-inch discharge line at approximately 50 gpm. Adjustments to Solve-215D dose were made in response to visible observations of the inline flock (sample port samples), Geotube® filtrate quality, and filtrate release volume from the Geotube® container. The dredge operator filled this Geotube® container four times in ten days then left the container to finish dewatering.



This cable dredge transferred the residuals from the lagoon to the Geotube® container.



Geotube filled to maximum height 7 ft.