



## Dewatering Residuals at Chemical Manufacturing Facility

### Objective

A chemical manufacturing and oil refining facility in Illinois currently manages its wastewater treatment plant residual by transporting two to three-percent dry weight oil-contaminated solids to two holding lagoons via tanker truck. Holding capacity for each lagoon is approximately 3.5 million gallons, with a maximum berm height of 4-ft. In order to facilitate the drying of residual in each lagoon within six months, a tractor was used to turn over the solids daily and expose bottom solids to the atmosphere. As facility production has expanded, the timeline for passing a Paint Filter Test and excavating a lagoon's solids has shortened. Facility managers searched for supplementary dewatering options including rental of a mobile belt filter-press, centrifuge, and/or Geotube® dewatering technology. Managers were forced to make a decision because the North Lagoon was at capacity and not sufficiently dry to mechanically excavate. The objective was to process and manage facility residuals in a cost effective and effi-

cient method with minimal processing time. Geotube® containers were evaluated via a full scale pilot study in 2007 to process and manage facility residuals from the south lagoon with a cost effective and efficient method with minimal processing time.

### WaterSolve's Conditioning Chemical

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 9233 was the recommended polymer for dewatering this residual in Geotube® containers. We recommended using Solve 9233 at a dose rate of 200 ppm in order to pass a Paint Filter Test for subsequent excavation to a landfill.



The South Lagoon residual chemically conditioned with Solve 9233 compared to unconditioned residual.



The oil-contaminated lagoon residual conditioned with Solve 9233 were poured through a GDT container. Filtrate and core samples were collected for drying timeline.

# TENCATE Geotube®

**Location:** *Illinois*  
**Products:** *TenCate™ Geotube® Containers  
Solve 9233- Emulsion*  
**Equipment:** *Polymer Make-down Unit*

## 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. Two thousand feet of 45-ft circumference GT500 Geotube® containers were delivered May to September 2007 to contain and dewater the lagoon residuals.

## The Result

A local environmental contractor and WaterSolve were contracted by the facility to hydraulically pump 3.5 MG of oil-contaminated residuals from South Lagoon and dewater the residuals in 2,000 ft of 45-ft circumference Geotube® containers located in the lagoon. A WSLP-2400 polymer make-down system with a 10-gph chemical feed pump were used to facilitate mixing/activation of Solve 9233 polymer with

water (1:200). A 2-inch fire hose was used to deliver make-down water from an onsite fire hydrant to the polymer make-down unit at approximately 100-gpm and 100 psi. Made-down polymer was injected into the 6-inch discharge line at approximately 50 gpm. Adjustments to Solve-9233 dose were made in response to visible observations of the inline sample port samples, Geotube® container filtrate quality, and filtrate release volume from the Geotube® containers.

Lagoon residuals were chemically conditioned in-line with a polymer make-down unit and initially pumped into three Geotube® containers at the east-end of the lagoon at 550 gpm over fourteen days. Six months of intermittent pumping were required to fill all of the Geotube® containers to greater than 75 percent of dewatered volume capacity with greater than 25-percent dry weight solids remaining.



The facility management and the environmental contractor have contained this dewatering with excellent results.