Your Water, Wastewater, & Materials Dewatering Partner

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Removing sediment from a landfills settling pond

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Objective

The managers of this landfill in Michigan needed to perform a routine sediment removal of the solids in their settling pond. The state requires regular sediment removal of the solids that settle out from the truck wash and driveway water that enter this settling pond during rain events throughout the year. WaterSolve technicians gathered a sample of the sediment, tested it and made a turnkey proposal to dewater the sediment in a Geotube® container for transfer to the solids storage in the landfill. The objective was to economically remove the solids from the settling pond and dewater them for subsequent hauling and storage in the landfill. The proposal included agitation and pumping of the sediment, chemical injection of the polymers, a Geotube® container, and the labor to operate the system.

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 footprint on which to lay down a Geotube® container was limited to the east end of the settling pond. The Geotube® estimator indicated a 60' circumference by 129' long container would dewater about half of the estimated sediment in the pond and it would fit in the space provided. This tube holds approximately 740 cubic yards.

WaterSolve's Chemical Conditioning

A representative sample of pond sediment was tested by a technician in the WaterSolve lab. 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 in a Geotube® container. The WaterSolve technician performed a Rapid Dewatering Trial which indicated the sediment could be diluted to 14.5% dry wt solids, treated with the Solve 137, and dewater to 31.5% dry wt solids in 1 hour. The results of this testing indicated the sediment would successfully dewater in a Geotube® container and the data collected was used to help estimate the cost of the project.

This Geotube® container was placed on the containment pad at the end of the holding pond and the filtrate drained back into the pond.

The telescoping forklift is holding the hydraulic pump in the settling pond and the 6" hose coming from that pump is connected to the white mixing manifold in which the polymer is injected.

Location: Michigan

Products: TenCate™ Geotube® Containers

Solve 137- Emulsion Pol-

Equipment: Polymer Make-down Unit

Treatment Products, Solutions & Services Through Science, Engineering & Management

The Result

WaterSolve LLC was contracted by the facility to dewater the settling pond residuals into a 60’ circumference by 129-ft long Geotube® container placed on a containment pad provided by the landfill. A polymer make-down unit and mixing manifold were plumbed into the 6” feed-line in which a 6” hydraulic pump transferred the residual out of the settling pond to the Geotube® container. A tote of Solve 137 emulsion polymer was plumbed to the make-down unit. A sample port near the Geotube® container provided visual samples of the floc to determine changes needed to the polymer feed rate. The settling pond was designed with 4’ of slope to one corner. The hydraulic pump was held in the lowest corner with a telescoping forklift. The 6” hose coming from the pump ran through the mixing manifold for chemical injection and into the fillport of the Geotube® container. As the filtrate water exited the tube it returned to the pond.

Some sandbags were used to dam up some of the filtrate water. Two 2” trash pumps were used to pump the filtrate water and spray the mud in the pond to get it into suspension. Workers sprayed the mud toward the hydraulic pump and it was pumped to the Geotube® container. The operation took one week to complete and the plant plans on excavating the Geotube® container in the summer then putting down another tube in the future to finish gathering the remaining solids in the pond.

This WaterSolve technician is spraying the solids so they flow to the pump. No harm is done to the liner with process.

The Geotube® container is continuing to dewater. It was filled in November and will be excavated in the upcoming summer.