



Dewatering residual from refineries fire water pond

Objective

30 years of process water entering a 5 acre pond resulted in a serious 3 to 10 foot buildup of solids at this refinery. Plant operators needed a process of removing the residual that would not damage the integrity of the banks of the pond or the liner. A diving company was contracted to enter the pond and vacuum the sediment. The objective was to get the residual dewatered and pass a paint filter test so it could safely be hauled from the site. The plant had previously attempted to remove residuals that resulted in spills on the roadways and issues they did not want repeated. Geotube® dewatering was selected by the environmental contractor in charge of the project. The thorough lab testing and success on similar projects led the contractor to go with WaterSolve for this project.

Conditioning Chemical

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 rates 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. The WaterSolve technician performed a cone test in which 1000-mL of a 6.5% dry weight solids sample was treated with Solve 216B and poured through a cone made from Geotube® GT-500D fabric. The results of this test indicated the 6.5% dry weight solids were raised to 19.4% after 1 hour of dewatering. This testing indicated the sediment would successfully dewater in a Geotube® container and the data collected was used to help estimate the supplies and cost of the project.



WaterSolve provided a drawing for this containment pad and a contractor graded it per the drawing. Jersey barriers were placed around the perimeter as a containment wall for water and the Geotube® containers.



The Geotube® containers are beginning to fill up in the containment pad which has a 15-mL liner to contain and direct the water back to an adjacent pond.

Geotube® Container Sizing

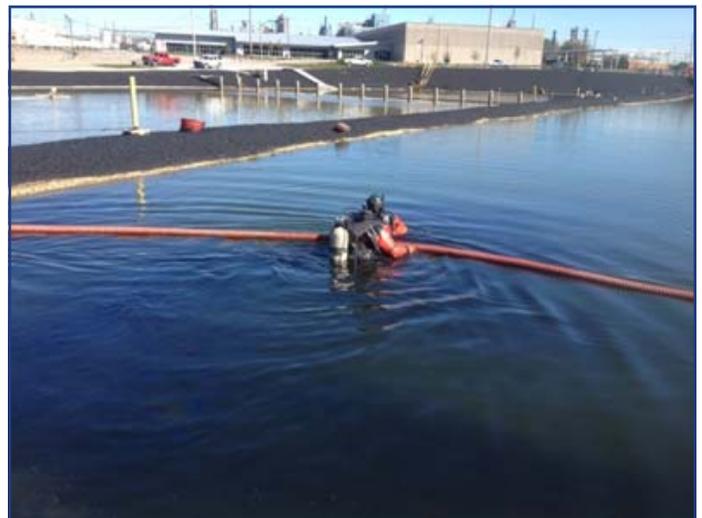
Geotube® containers are manufactured from high strength polypropylene fabric and designed to allow effluent water to escape through the pores of the fabric while retaining the chemically-conditioned solids. The footprint on which to lay down the tubes was limited to an area between ponds on the site. Two 45' and two 50' circumference by 143' long Geotube® containers would make maximum use of the space available and would hold around 2,200 cubic yards of the dewatered residual.

The Result

A WaterSolve LLC field technician was on site to install, operate, and train the environmental contractor on how to most effectively manage the Geotube® dewatering system. A containment pad was designed and drawn by WaterSolve for this site. The environmental firm had prepared the pad exactly as drawn. Jersey barriers were placed around the perimeter of the pad to provide a wall for the containment. A 15-mL liner was placed in the containment and secured with sand bags. Filtration fabric was laid on top of the liner before rolling out the Geotube® containers to allow water to drain between the bottom of the tubes and the liner. A 3" soft hose transferred the residual from the divers pump to the Geotube® containers. The polymer make-down unit was placed in a small containment outside the Geotube® pad along with a tote of Solve 216B. The unit was plumbed into a mixing manifold placed in the 3" residual pipeline. The divers worked in tandem while in the water known as the buddy system. There must be two in the water in case one has a problem so the other is there to assist. Both have a 2" suction hose joined together to a 3" hose which is attached to a pump that sends the residual to the Geotube® containers. The divers have an air supply on their backs that lasts an hour and a half. They have radio communication with each other and a shore watch who is there to assist them and get help if needed. The residual is transferred to the tubes at around 200-gpm. A sample port placed in the pipeline after the polymer is injected allows a technician to pull samples regularly to visually assess if the proper amount of polymer is being fed. He then makes changes based on the observations. The project is ongoing and all parties are happy with the process.



The polymer make-down unit is placed adjacent to the Geotube® containment and it injects the Solve 216B into the residual pipeline.



The divers are entering the pond and will begin removing the residual as they each take a 2" hose to the bottom and begin vacuuming the sediment.