

HANGING BAG TEST

Assemble the needed equipment adjacent to the site. The equipment consists of Flint Industries' Hi-Flo dewatering fabrics constructed hanging bags, 55-gallon opened top container, two support pipes, six 5 gallon pails, polymers and dilution water (from lagoon), liquids measurement equipment, conductivity meter, pH meter, infrared moisture content analyzer, tape measure, and a rope for suspending bags. Suspend hanging bag from metal support in tent over open-top container. The Bag shall be secured with ropes to fit partially in the open-top container.

Acquire one cubic foot sample of sludge from the lagoon (7.5 gallons). Divide the sludge three 5 gallon buckets, approximately 2.5 gallons each. Add dilution water to make a 50% slurry (add 2.5 gallons of lagoon water to each bucket). Mix sludge and water until evenly mixed. Take samples of mixed slurry for moisture content analysis. Add diluted polymer (0.5% concentration) and mix by hand for a 1200 PPM of concentration. This requires 22.71 ml of the neat polymer diluted into 4572 ml of lagoon water, divided evenly among the three buckets. Mix thoroughly and inspect for floc development to. Note time for reaction for floc formation. Add diluted polymer (0.3% concentration) and mix by hand four and 300 PPM concentration this requires 5.67 mL of neat polymer diluted into 1892 ml of lagoon water, divided evenly among the three buckets. Visually inspect for floc development note time for reaction of floc formation. Due to volumes of dilution water required for polymer make-down, it will be necessary to transfer approximately one gallon from each bucket after mixing in polymer to a fourth bucket. The original volume of sludge shall remain at one cubic a foot. As quickly as possible, pour the contents of the bucket into the hanging bag. Measure the depth of the slurry level below a fixed reference point at "zero" time and commence timing the decrease in slurry level within the bag. Measurements shall be taken at 20-second intervals. The interval may be increased as the drainage slowed with time. Measurements shall be taken until free drainage ceases. All tail water will be caught in the open-top container. After drainage has ceased, the tail water shall be sampled and analyzed for TDS, pH and calcium content (laboratory test). A visual inspection of the clarity of the tail water shall be recorded.

The lagoon water used for polymer made-down shall be sampled and analyzed for the same parameters specified earlier. The sludge filter cake (scraping from the inside of the bag) and a sample of the residual sludge (from the interior section) shall be sampled and analyzed for percent solids. A visual evaluation of the geotechnical engineering properties (plasticity, cohesion, shear strength) shall be performed. Measure the tail water flow rate via the changing height in the drum. These data will be used to back-calculate the rate of consolidation of the slurry. Typically, if the sludge is draining freely, the test is completed in less than 30 minutes. However the bag will be allowed to drain for up to 24 hours if necessary.

