

Attachment 4
MODIFIED PLASTIC LIMIT TEST
ASTM D 4318

This modified plastic limit test is to be used to determine the presence (or absence) of residual sludge in the bottom of oil field surface impoundments being closed using the procedures mandated in the Surface Impoundment Closure Guidelines. The test is a qualitative analysis to determine the depth of excavation required to eliminate all sludge material from an impoundment prior to backfilling. The test determines whether excavated materials are solids or sludge by virtue of their ability to form "worms" when rolled between gloved hands.

1. Sampling:

A. To "calibrate" the test, a one quart sample of sludge should be taken after all liquids have been removed from the impoundment but prior to initiating aggressive excavation of the impoundment. This sample will be labeled "Sample 1".

B. When the apparent limit of sludge has been excavated, another one quart sample is collected and stored in its own container.

2. Procedure:

A. Using rubber gloves, remove approximately one tablespoon of material from "Sample 1" and, initially applying light pressure, begin rolling the material between the palms.

If the sample spreads between the palms and does not begin to form "worms", excavation must continue.

B. All subsequent samples taken during the excavation are processed as described in step 2 (A) above, until "worms" form when the sample is rolled. If necessary, the retained portion of "Sample 1" should be re-analyzed from time to time to "calibrate" the sampler's hands.

3. Documentation:

A. As part of the final report described in the Surface Impoundment Closure Guidelines, photographs of the impoundment must be taken at the depth that the testing indicates that all sludge has been removed and prior to initiating backfilling operations.