



# Berry Petroleum Company

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Berry will be running up to 10% (by volume) diesel oil in the water based drilling mud as a shale stabilization and friction reduction additive while drilling the production hole interval.

Berry is utilizing a total closed-loop drilling fluid system, no reserve pit is required.

- A two phase shaker screen process for separating solid cuttings into storage piles is used pending final reclamation and utilization as fill and grade material.
  - The first set of shale shakers removes wet cuttings while whole drilling mud is transferred back to the circulating system. Wet cuttings are transferred to the 2nd set of shale shakers.
  - The second set of shale shakers is used to dry cuttings while whole drilling mud is transferred back to the circulating system. These cuttings are temporarily stored in a steel cuttings bin.
  - A front end loader transfers cuttings to a storage area on the drilling location. The cuttings are segregated into surface hole cuttings or production hole cuttings. These cuttings have the consistency of dried gravel. Cuttings will be placed on an impermeable liner within a bermed area to prevent any percolation or migration.
  
- The second phase of the process includes:
  - Dual centrifuges separate whole mud from low gravity, fine colloidal solids.
  - Collection of fine solids in a steel bin
  - Treatment of fine solids from the centrifuges with Portland cement at a ratio of 5 parts fine solids to 1 part cement in order to dehydrate and solidify the fine solids
  - A front end loader transfers treated fine solids cuttings to the cuttings pile separated by either surface hole or production hole intervals. These cuttings have the consistency of dried mud. Cuttings will be placed on an impermeable liner within a bermed area to prevent any percolation or migration.
  
- The final phase of the process includes:
  - Exposure time and analytical testing to conform to COGCC standards per table 910-1 for beneficial re-use of materials.