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**Abstract Title: The Importance of Drill Waste Mitigation and Fluid Management**

**Organizations:** BOS Solutions

**Theme:** Trenchless Project Planning, Design, Construction, and QA/QC

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## **Abstract**

Drilling fluid performance is critical to ensure efficient reaming or drilling. An effective fluid product will reduce drag and torque, provide hole stability, and effectively transport drill solids to surface. One key to maintaining effective condition is controlling the density of the fluid which reduces the risk of a frac-out. The most effective means of maintaining drill fluid is by utilizing centrifuges to continually process the active fluid. Centrifuges are fully variable units with high processing capacity to continuously process bentonite muds. Creating consistency in the drilling fluid is essential in avoiding frac-out scenarios.

Along with providing solids control equipment and services BOS can utilize its equipment to reduce waste volumes and dewater mud slurries. The benefits are shown in the two case studies below.

### **HDD Cuttings Drying**

During most Horizontal Directional Drilling (HDD) crossings, shale shakers are utilized as the primary means of solids control. This system results in a very wet drilling waste being generated with a high volume of fluid losses at surface. The total volume of drilling waste is usually transported off-site by vacuum trucks and has to be disposed of at a Class II wet waste disposal facility. Not only is this practice expensive, but increases traffic risk and environmental impact.

BOS employed a BOS III Tank along with Centrifuges, Recirculation Trough, Shale Bin and BOS Generator to effectively dry the drill cuttings during operation. To perform cuttings drying, the shale shaker overflow plus drilling fluid that floods over the shakers is collected in the recirculation trough and reprocessed through high g-force centrifuges. This results in a dry waste product that passes the Paint Filter Test and recovered drilling fluid reused in the mud system.

Operating the BOS Cuttings Drying System resulted in:

- Reduction of daily hydro vacuum trucks from 5 operating to 1 on standby per shift when processing from entrance location (Vacuum truck charge = \$200/hr)
- Reduced total waste volume by 30%, and re-classified as a dry waste product
- Reduction of water usage for dilution by recovering over 250 m<sup>3</sup> (2,100 bbl) of fluid
- Maintained a 1030 kg/m<sup>3</sup> (8.60 lb/gal) mud weight reducing the risk of frac-outs while drilling

### **Dewatering**

By utilizing the BOS III Tank and centrifuges, along with a polymer addition, BOS can successfully reduce drilling mud and waste in to clean water and dry, stackable solids. Combining the flocculation chemistry with mechanical separation results in an increased processing capacity and improves the clarity of the clean water. This decreases project costs and eliminates the need for large sumps on site for storing drilling waste. The clean water can be reused in the HDD process or disposed of in a more environmentally friendly manner. The drill cuttings and mud product removed from the water is a dry, stackable solid, reducing waste volume for disposal by 30-50%. Creating a dry waste eliminates the need for vacuum trucks.