# Scott ENERGY TECHNOLOGIES LLC

Creating Value and Reducing Cost While Protecting the Environment Jeffrey Tyson - IPEC 2017 - San Antonio, TX



## **Overview**

- Drilling Waste and Traditional Management Methods
- Sham Recycling vs. Legitimate Recycling
- Ideal Recycling Program
- Solidification/Stabilization
- Reducing Costs
- Additional Benefits





## **Drilling Waste**

Rock cuttings and fluids that are produced during drilling

#### 1.2 barrels of waste generated per foot drilled

Average 50% solids / 50% liquids

392,000,000 bbls generated in 2014

Enough to fill 25,000
Olympic-size swimming
pools



## **Contaminants in Drilling Waste**

#### • Metals

- Arsenic
- Barium
- Cadmium
- Chromium
- Lead
- Mercury
- Selenium
- Silver
- Zinc

## **Salts**

- Chlorides
- Organics
  - Hydrocarbons
  - Benzene
- pH
- NORM/TENORM
- Proprietary / Uncertain additives





## **EPA's Waste Management Hierarchy**



## **Traditional Disposal Methods**





- Landfilling
- Land Spreading/ Land Farming
- Road Spreading (Road Application)
- On-site Burial



## Legitimate Recycling – U.S. EPA

- Provides a useful contribution to the recycling process or to a product or intermediate of the recycling process
- Produces a valuable product or intermediate
- Managed as a valuable commodity and in a manner consistent with the management of the raw material
- Must be comparable to a legitimate product or intermediate
  - Must meet widely recognized commodity standards and specifications

## The recycled product must meet environmental, geotechnical, and transportation performance criteria.



## Sham Recycling – U.S. EPA

"Sham recycling may include situations when a secondary material is <u>ineffective</u> or only <u>marginally effective</u> for the claimed use; <u>used in excess</u> of the amount necessary; or handled in a manner inconsistent with its use as a raw material or commercial product substitute."



## Sham Recycling

#### Insufficient or non-existent specifications

#### Little to no value created



## The Best Drill Cutting Recycling Program

- Mobile moving from site to site
- Saves money and creates value
  - Proper construction positively impacts drilling, completions, production, maintenance, safety, and liability
- Performance specifications are clearly defined
  - Transportation and geotechnical standards and specifications
    - Strength and durability
    - Designed to last the life of the well
  - Environmental standards and specifications
    - Hydraulic conductivity of 1x10<sup>-6</sup> cm/s or less
    - Leachability Criteria
    - Reduces operator's risk and liability
    - Sequesters contaminants instead of diluting the contaminants

## The Best Drill Cutting Recycling Program

- Routine, representative sampling to manage variability
- Physical and chemical analyses using appropriate test methods
- Bench-scale testing prior to processing
- No significant increase in volume
- Creates a valuable asset
- Protects human health and the environment



## Solidification/Stabilization

# Solidification/Stabilization (S/S) is the most appropriate and cost effective solution for managing drilling waste.

- Interstate Technology and Regulatory Council (ITRC) Guidance for S/S
- One of the most common in-situ technologies at Superfund sites for source control
- Initially used to dispose of radioactive and nuclear materials
- Produces a strong, concrete or asphalt -like material
- Utilizes both chemical and physical controls

Jeffrey Tyson - IPEC 2017 - San Antonio, TX



12

## Solidification/Stabilization

- Well rounded technology
  - Treats salts, metals, hydrocarbons and other contaminants known to be present in drilling waste
  - Inherently treats other unknown contaminants as well
- Apply transportation and geotechnical engineering principles
  - Resistant to rutting
  - Load-bearing structure designed for direct traffic
  - Bridges soft underlying soils
  - Turns waste into an asset



Completed Firmus<sup>®</sup> Process

## Solidification/Stabilization

# Firmus<sup>®</sup> Processed Cuttings



## **Reducing Costs**

#### Typical Model

- Disposal
  - Box Rental
  - Trucking
  - Solidification
  - Disposal
  - Washout
  - Equipment and personnel
- Construction
  - Labor
  - Equipment
  - Materials

- Scott's Recycling Model:
  - Sampling and Testing
  - Trucking
  - Processing
  - QA/QC
  - Construction



## **Additional Benefits**

- Reduces trucking costs and miles traveled
- Reduces construction costs for lease roads and drill pads
- Reduces the need for raw aggregates to be mined
- Less overall land impacts
- Reduces maintenance costs on lease roads and drill pads
- Reduces environmental risk and liability
- Reduces disposal costs
- Provides a more stable location
  - More efficient operations means saving time
  - Enhanced safety reduces slips, trips, falls
  - Not effected by inclement weather
- Based on sound Science



## **About Scott**

- Established in 1994
- Pioneers in the drilling waste management industry
- Expert project and waste management
  - Successfully recycled hundreds of thousands of cubic yards of drilling waste from hundreds of oil and gas wells across the U.S.
  - Constructed hundreds of drill pads/lease roads using drill cuttings
- Specially trained employees, professional engineers and strict QA/QC
  - Representative samplings, bench scale testing, and in-house geotechnical lab
- Sustainable practices based solely on sound science
- Patented process for recycling drilling waste



#### **About Scott**

Jeffrey Tyson, P.E. Corporate Sales Executive Scott Energy Technologies LLC <u>www.scottenergy.com</u> 903-663-4635 jntyson@scottenergy.com

