QUALITY ASSURANCE POLICY MANUAL

(QAPM)

Revision 20

for

Benchmark Analytics, Inc.
Corporate Office:
4777 Saucon Creek Road
Center Valley, Pennsylvania 18034-9004
Telephone: (610) 974-8100
FAX: (610) 974-8104

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Approvals

Fiona Adamsky, General Manager
Benchmark Analytics, Inc., Center Valley, PA

Kay Shimer, General Manager
Benchmark Analytics, Inc., Sayre, PA

Chris Medei, Laboratory Manager
Benchmark Analytics, Inc., Center Valley, PA

Jason Ackerman, Technical Director
Benchmark Analytics, Inc., Center Valley, PA

Irene Chu, Technical Director
Benchmark Analytics, Inc., Sayre, PA

Tiffany Barnes, Technical Director
Benchmark Analytics, Inc., Center Valley, PA

Michael Bergenheier, Technical Director
Benchmark Analytics, Inc., Center Valley, PA

Theresa Fenstermaker, Quality Assurance Officer
Benchmark Analytics, Inc., Center Valley, PA

Carrie Davis, Quality Assurance Officer
Benchmark Analytics, Inc., Sayre, PA

## Table of Content

# I. Policy And Mission Statement

A. Our objectives and mission are:

1. To work as a team.
2. To recognize that our customers are:
   a. The clients,
   b. The DEP and EPA and other regulatory agencies,
   c. All employees of Benchmark Analytics, Inc.
3. To meet the scheduled and unscheduled needs of all our customers all the time.
4. To provide data that is accurate, reproducible, defensible, and timely by:
   a. Using EPA, DEP, or other approved protocols for testing methods;
   b. Meeting the requirements of Good Laboratory Practices, National Environmental Laboratory Accreditation Program (NELAP) and regulatory authorities or organizations providing recognition;
   c. Ensuring that all laboratory personnel are appropriately trained and provided with the necessary equipment and supplies to carry out their responsibilities;
   d. Ensuring the confidentiality of all client and company information.

B. The commitments of management are:

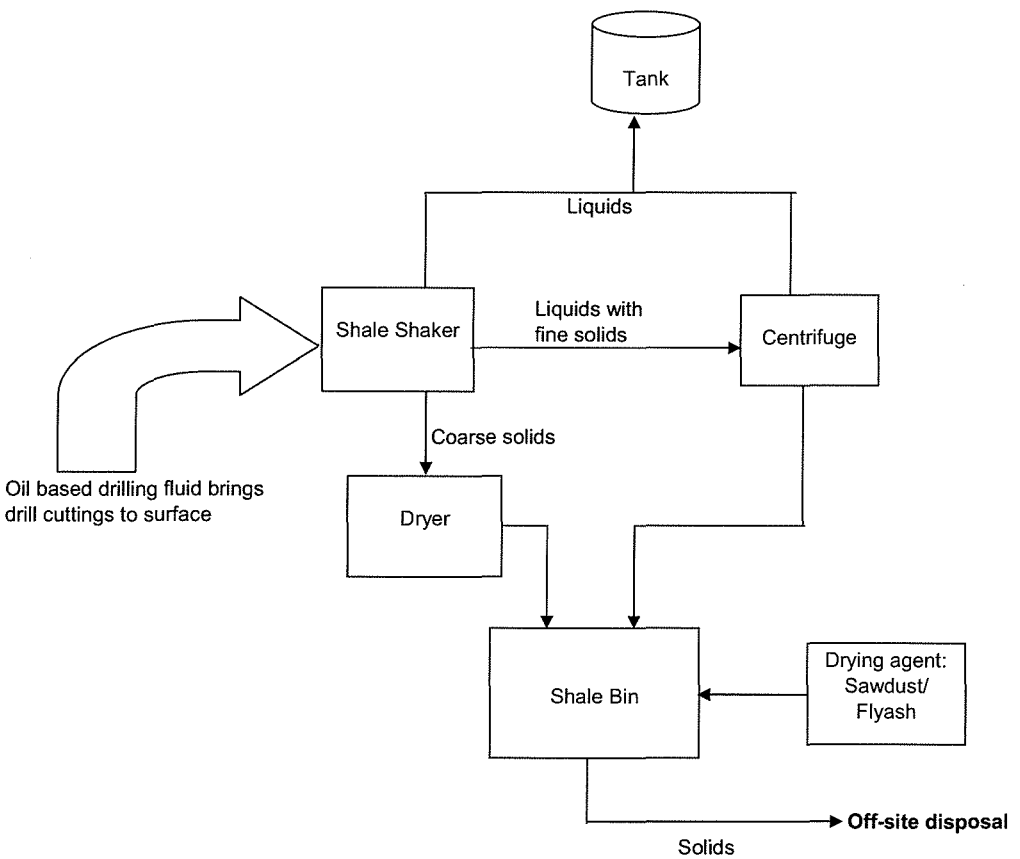
1. To good professional practice and to the quality of Benchmark Analytics, Inc. environmental testing and calibrations in servicing it's clients.
2. To ensure that all personnel concerned with environmental testing and calibration activities within the laboratory familiarize themselves with the quality documentation and implement the company policies and procedures in their work.
3. To ensure compliance with the NELAC Standard for all certified environmental testing and to meet the requirements of the NELAC Standard.

## SECTION B - 3a and 3b

### Process Description for Generation of Horizontal (Invert) Drill Cuttings

Drilling residuals are generated during the drilling of a natural gas well; fragments of soil and rock are broken by the drill bit and brought to the surface in the drilling fluid. Oil based drilling fluids are used as the drilling fluid during horizontal drilling operations.

### Schematic of Horizontal (Invert) Drill Cuttings Generation



## SECTION B – 2b

Waste Sampling Method – Drill Cuttings

In accordance with Pennsylvania Code 271.611 (a)(3) and 287.132 (a)(3), samples are collected per Environmental Protection Agency (EPA) SW-846 in accordance with Quality Control guidelines set forth in Chapter 1.

The drill cuttings are homogeneous to randomly heterogeneous. Simple random sampling is performed to obtain a composite sample of the cuttings (SW-846, Chapter 9, Page 8). The sampling process is summarized below:

- A clean, stainless steel scoop and latex gloves are used to collect the samples.
- Samples are collected in new, pre-cleaned, laboratory provided, 8-ounce sealed glass jars.
- A composite sample of the homogeneous drill cuttings is collected from the stored cuttings.
- Sample jars are labeled and stored in a cooler at or below 4 degrees Celsius en route to the laboratory.
- Decontamination procedures are summarized below:
    - Stainless steel scoop is washed in warm Alconox and water solution
    - A distilled water rinse is applied
    - Scoop is dried
    - Clean scoop is wrapped in aluminum foil

This document covers the following Benchmark Analytics, Inc. locations:

Center Valley Laboratory, Center Valley, PA

Service Center, East Stroudsburg, PA

Eastern Division, Sayre PA

## SECTION B – 2d

Hazardous Waste Determination

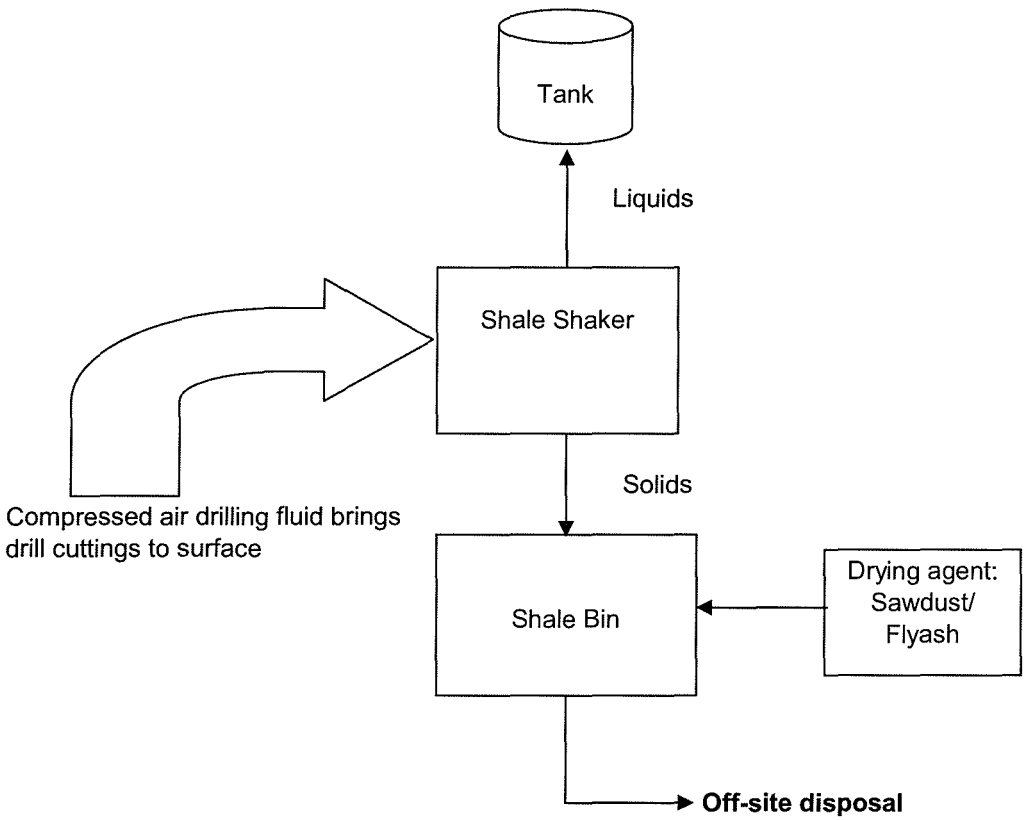
In accordance with Federal Code 40 CFR 261.4 (b)(5) and as incorporated by reference at 25 PA Code 261A.1 drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas or geothermal energy are exempt from being classified as hazardous waste.

## SECTION B - 3a and 3b

## Process Description for Generation of Vertical (Air) Drill Cuttings

Drilling residuals are generated during the drilling of a natural gas well; fragments of soil and rock are broken by the drill bit and brought to the surface in the drilling fluid. Air is used as the drilling fluid during vertical drilling operations.

## Schematic of Vertical (Air) Drill Cuttings Generation



## SECTION B – 2b

Waste Sampling Method – Flow Back Sand

In accordance with Pennsylvania Code 271.611 (a)(3) and 287.132 (a)(3), samples are collected per Environmental Protection Agency (EPA) SW-846 in accordance with Quality Control guidelines set forth in Chapter 1.

The flow back sand is mostly homogeneous and consists of crystalline silica (quartz). Simple random sampling is performed to obtain a composite sample of the flow back sand (SW-846, Chapter 9, Page 8). The sampling process is summarized below:

- A clean, stainless steel scoop and latex gloves are used to collect the samples.
- Samples are collected in new, pre-cleaned, laboratory provided, 8-ounce sealed glass jars.
- A composite sample of the flow back sand is collected from the returned sand for all wells drilled on a single pad.
- Sample jars are labeled and stored in a cooler at or below 4 degrees Celsius en route to the laboratory.
- Decontamination procedures are summarized below:
    - Stainless steel scoop is washed in warm Alconox and water solution
    - A distilled water rinse is applied
    - Scoop is dried
    - Clean scoop is wrapped in aluminum foil

## SECTION B - 3a and 3b

### Process Description for Generation of Flowback Sand

Flowback sand is generated during the completion/hydraulic fracturing of a natural gas well. Sand is injected into the well bore to fracture the shale and hold open the fractures. The sand is returned to the surface and wasted.

### Schematic of Flowback Sand Generation