



Anadarko E&P Company, LP/Kerr-McGee Oil & Gas Onshore LP

Waste Management Plan Drilling Fluids & Associated Drill Cuttings

This document outlines the operational requirements to be used when applying water-based bentonitic drilling fluids and associated drill cuttings to private or company-owned spread fields or the land treatment and application of water-based bentonitic drilling fluids and associated cuttings on the pad location where they were generated to maintain compliance with COGCC Rule 907.d.(3). These materials are being applied as a beneficial soil amendment.

The spread fields covered under this Waste Management Plan are detailed in Table 1. Only water-based bentonitic drilling fluids and associated drill cuttings generated by Kerr-McGee Oil & Gas Onshore LP/Anadarko E&P Company, LP (Kerr-McGee/Anadarko) will be applied at these sites. No other E&P waste shall be deposited at these sites. Changes to Table 1 will be provided to the COGCC in a Form 4 Sundry Notice.

Spread Fields (Private Surface or Company Owned)

1. Kerr-McGee/Anadarko shall obtain written authorization from the surface owner (if non- Kerr-McGee/Anadarko land) prior to land application of water-based bentonitic drilling fluids and associated drill cuttings. The signed agreement shall state that only Kerr-McGee/Anadarko-generated materials will be accepted and that incorporation of the material will occur within 10 days of application.
2. Each spread field will be divided into approximately equal sized pods. A 3-inch maximum lift of water-based bentonitic drilling fluids and associated drill cuttings will be applied.
3. Daily tracking tickets will be used and will include the following information:
 - * name of well where material was generated
 - * date of transfer of the material from the well to the spread field
 - * volume of material taken to the spread field
 - * name of transporter
 - * pod where drilling fluid was applied
4. The volume of material transported to the spread field will be tracked using a spreadsheet to help ensure the 3-inch maximum lift per pod is not exceeded.
5. Conditions permitting Kerr-McGee/Anadarko personnel will ensure the material will be incorporated into the soil within 10 days.

6. Soil sampling will be conducted following incorporation.
 - * A 4-point composite soil sample will be collected from an interval of 0-8 inches below ground surface (bgs), from every pod where material was applied.
 - * At a minimum, soil samples will be analyzed for total petroleum hydrocarbons (TPH – C6-C36), benzene, toluene, ethylbenzene, xylenes (BTEX), electrical conductivity (EC), sodium adsorption ratio (SAR), pH, arsenic, and barium to ensure compliance with COGCC Table 910-1 or applicable background levels of native soils.
7. In the event of any Table 910-1 exceedance, a COGCC Form 4 Sundry Notice will be prepared and submitted (along with supporting documentation) to explain the exceedance and outline appropriate remediation measures.
8. Kerr-McGee is currently utilizing the facilities below for land application of water-based bentonitic drilling fluids and associated drill cuttings.
 - * Drilling Fluid Management Facility 1 (facility ID 149021)
 - * Drilling Fluid Management Facility 2 (facility ID 437129)

Land Treatment and Application Onsite (Private Surface or Company Owned)

1. Kerr-McGee/Anadarko shall obtain written authorization from the surface owner (if non- Kerr-McGee/Anadarko land) prior to onsite land treatment with solidification and/or bioremediation products and application of water-based bentonitic drilling fluids and associated cuttings to the well pad location. The signed agreement shall state that only Kerr-McGee/Anadarko-generated materials will be accepted and that incorporation of the material after treatment will occur within 10 days, weather permitting, after the conclusion of drilling and/or well completion activities at the well pad location.
2. During treatment, water-based bentonitic drilling fluids and associated cuttings will be stored in a temporary containment area.
3. Soil sampling will be conducted to ensure that resulting concentrations do not exceed Table 910-1 allowable levels or applicable background levels.
4. Soil sampling will be conducted following incorporation.
 - * A 4-point composite soil sample will be collected from an interval of 0-8 inches bgs, from every well pad where material was applied.
 - * At a minimum, soil samples will be analyzed for TPH, BTEX, EC, SAR, pH, arsenic, and barium to ensure compliance with COGCC Table 910-1 or applicable background levels of native soils.
5. In the event of any Table 910-1 or applicable background level exceedance, a COGCC Form 4 Sundry Notice will be prepared and submitted (along with



supporting documentation) to explain the exceedance and outline appropriate remediation measures.

**Waste Management Plan
Oil-Based Drilling Fluids & Associated Drill Cuttings**

Oil-Based Drilling Fluids and the Associated Cuttings

1. All oil-based drilling fluids and the associated cuttings be solidified and disposed at one of the licensed commercial disposal facilities noted below.
 - * Buffalo Ridge, Keenesburg
 - * North Weld Landfill, Ault
 - * Waste Connections, Erie