

# **SECTION I PIT CLOSURE PLAN**

## **1.0 INTRODUCTION**

### **1.1 PURPOSE**

This closure plan will be implemented by ExxonMobil Corporation to facilitate closure of three pits used for the management of exploration and production (E&P) wastes generated during the drilling of natural gas wells at the Piceance Creek Unit (PCU) 297-13A well pad location within Rio Blanco County. ExxonMobil will reclaim the three pits per applicable COGCC regulations.

This well pad contains three synthetically lined pits including a freshwater, reserve, and cuttings pit. Pit liners were installed in accordance with COGCC rule 904. The synthetic liner material consists of a geotextile fabric layer followed by a 24 mil polyolefin top layer. Both materials are stable and nonhazardous.

### **1.2 SCOPE**

This closure plan describes the activities that will be performed during the closure of pits at the PCU 297-13 location. The objectives of the closure plan are two-fold:

- 1) To fully characterize closure activities for each pit; and
- 2) To safely decommission the pits in an environmentally acceptable manner, in compliance with applicable federal, state, and local regulations.

This closure plan details the following items:

- A schedule for pit closure activities
- Notification requirements
- Provisions for removal of liquid wastes
- Provisions for the evaluation of remaining sediment
- Provisions for the removal of sediment
- Provisions for synthetic liner removal
- Provisions for the evaluation of soil conditions beneath pit liners
- Site grading and revegetation
- Post-closure monitoring of revegetation

### 1.3 CLOSURE SCHEDULE

ExxonMobil plans to begin pit closure activities in the summer of 2010 (as early as June 2010).

### 1.4 NOTIFICATIONS

Although not specifically required under COGCC regulations for lined pits, a Form 27 (Site Investigation and Remediation Workplan) is being submitted to the COGCC prior to pit closure. This form along with Sundry Form 4 accompanies this submittal.

## **2.0 PRE-CLOSURE PROCEDURES**

### 2.1 REMOVAL OF PIT LIQUIDS

As part of initial pit closure activities, free liquids will be removed from the pits. Any residual fluids will be pumped from the pits into tanker trucks. The liquid waste will then be sent to a permitted disposal facility for injection, evaporation and/or treatment.

### 2.2 PIT SEDIMENT CHARACTERIZATION

The Pit Evaluation and Site Background Findings Report located in Section II of this submittal details the pit sampling and analysis plan that was implemented to characterize E&P wastes located at the PCU 297-13 well pad location. A representative composite sediment sample was collected from each pit for laboratory analysis. These results are summarized in Table 1. Sample collection was implemented in accordance with the sampling protocol presented in Appendix A. Analytical parameters included COGCC "Table 910-1 Concentration Levels" for soils. It should be noted that COGCC allows for the consideration of background levels in determining allowable levels of constituents listed in Table 910-1. ExxonMobil elected to collect background samples at this well pad location to evaluate background conditions.

### 2.3 NATIVE BACKGROUND CONCENTRATIONS

As detailed in Section II, background samples were collected at three undisturbed locations adjacent to the well pad. A paired sampling protocol was implemented, which consisted of a surficial sample collected at a depth of one foot below ground surface (bgs) and a sample

collected at a depth consistent with the depth of the well pad pits. Background samples were analyzed for total arsenic, SAR, EC, and pH. These results are summarized in Table 1.

The statistical methodology recommended by the CDPHE was used to establish allowable constituent levels based upon background sample data (reference: CDPHE, December 31, 1997, Proposed Soil Remediation Objectives Policy Document (Attachment 4), Hazardous Material and Waste Management Division). The following maximum background concentrations levels are proposed for the PCU 297-13 well pad location:

Arsenic: 12.3 mg/kg

pH: 12.06

See Section II of this submittal to review the statistical analyses and associated laboratory results.

## 2.4 PIT SEDIMENT REMOVAL

Pit sediments that contain constituent concentrations above the COGCC allowable levels and above established background concentration levels will be either mixed with inert materials (soil, solidification reagent, fly ash, wood chips, etc.) and/or removed prior to final pit closure. Those sediments that continue to exceed COGCC and background allowable levels will be transported offsite to either a centralized E&P Waste Management facility for treatment/disposal or to a permitted solid waste disposal facility for disposal. Pit sediments that do not contain constituent concentrations above the COGCC or background allowable levels may be left in-place for final closure.

Based on pit sampling results, the following pit sediment management plans have been developed for the PCU 297-13 site:

Freshwater Pit: remove all pit contents and send for offsite treatment/disposal

Reserve Pit: mix/dilute pit sediments. Bury sediments in place.

Cuttings Pit: remove all pit contents and send for offsite treatment/disposal

Spoils Pile: use as backfill material onsite, but not for top three feet of cover

## 2.5 PIT LINER REMOVAL

As required by the current COGCC regulations, synthetic pit liner material must be removed and disposed in accordance with applicable legal requirements for solid waste disposal. Pit liners from each of the three open pits at the PCU 297-13 well pad location will be removed and sent for offsite recycling/disposal.

## 2.6 EVALUATION OF SUB-LINER SOIL CONDITIONS

As part of the pit closure activities, soils must be sampled and tested beneath the pit liner for evidence of leakage from the pit. Per COGCC regulations, at least one soil sample will be collected from immediately beneath the liner near the lowest point of the pit for analysis of the Table 910-1 parameters. Samples will generally be collected following the sampling protocol presented in Appendix A. If analytical results or sub-liner visual soil inspections indicate that soils have been impacted (meaning constituent levels are above Table 910-1 and established background concentration levels), ExxonMobil Corp. will conduct further assessment and corrective action per COGCC regulations.

# 3.0 CLOSURE / POST-CLOSURE ACTIVITIES

## 3.1 PIT BACKFILLING, SITE GRADING AND REVEGETATION

Following the sub-liner soil sampling and analysis, each pit will be backfilled. Material used to fill the pits will be derived from available on-site material or material transported to the site. This material will be void of any solid waste and meet Table 910-1 or established background concentration levels.

The closed pits will be regraded to provide positive drainage to the perimeter of the closed pit without providing negative impact to surrounding areas. Following grading activities, stockpiled topsoil will be spread across re-graded pits and seeded with a BLM approved seed mixture and application rate. Additional soils stabilization practices, such as mulching, crimping, or erosion control blankets may be employed as deemed necessary.

### 3.2 POST-CLOSURE REVEGETATION MONITORING

Pits reclaimed under this closure plan will be inspected annually by ExxonMobil Corp. until sufficient interim reclamation, consisting of sufficient vegetative ground cover from reclaimed plant species is established (70 percent of pre-disturbance levels). It is anticipated that interim reclamation will be achieved within three growing seasons after the initial application of seed. Additional reclamation efforts will be undertaken if;

- 1) After the first growing season, there are no positive indicators of successful establishment of seeded species (e.g. germination);
- 2) After the second year, seeded species are not yet established (e.g. producing seed); and
- 3) After the third growing season seeded vegetative communities lack persistence (e.g. reproductively capable of enduring drought conditions and sustaining the seed community).

Following the third growing season, ground cover of reclaimed seed species shall be at a Desired Plant Community (DPC) in relation to the seed mix as deemed appropriate by the BLM. Reclamation achievement will be evaluated by the BLM using the Public Land Health Standards that include indicators of rangeland health. Reclamation efforts will be repeated as necessary to achieve the DPC, as requested by the BLM.