



Technical Analysis and Findings
Utah Coal Regulatory Program

October 8, 2015

PID: C0410002
TaskID: 5014
Mine Name: SUFCO MINE
Title: WASTE ROCK SITE EXPANSION

Operation Plan

Topsoil and Subsoil

Analysis:

Analysis: The information provided for Phase 1 of the waste rock site application meets the requirements of R645-301-230 Operation Plan for soils handling. An as-built survey of the volumes salvaged in Phase 1 (Map 2 Series) and volumes stockpiled (Map 4 series) will be provided within six months completion of Phase 1. The data reported for soils salvage and redistribution on Map Series 2 is hypothetical at this point. Upon receipt of the phase 1 as built, the plan for subsequent phases will be re-defined on all operational tables in the Map series 2 and the stockpiled volumes in Map series 4 will be adjusted accordingly.

Soil Map units 1 and 2 dominate the expansion area. These are very deep soils. Section 231.100 (p. 2-11) describes the salvage of 17 - 35 inches of topsoil and 0 - 38 inches of subsoil. Topsoil and subsoil will be placed in separate piles. Topsoil and Subsoil salvage volumes are presented in the WRDS Expansion table (p. 2-5) and on Map 2 sequence A-F in a more precise table format. In the map table, the approximate soil salvage depth is given in inches and the area of salvage is given in square feet. The volume to be salvaged and stockpiled is derived from these two numbers and reported in cubic yards. The average soil salvage depths used in the table is the weighted average reported in Table 8 of App V(A). Based upon the information provided on Map 2A for phase 1, the plan soil salvage in phase 1 meets the requirements for soil salvage and stockpiling. The data on all phases of the Map Series 2 is hypothetical at this point. Upon receipt of the phase 1 as built, the plan for subsequent phases will be re-defined on all operational tables in the Map series 2 and the stockpiled volumes in Map series 4 will be adjusted accordingly.

Scrapers will not be used to build the stockpiles due to the extreme compaction they create (Section 231.100, p. 2-11). Stockpile locations and volumes are shown on the Map 4 series for each phase.

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Reclamation Plan

Topsoil and Subsoil

Analysis:

Analysis: The information provided for Phase 1 of the waste rock site application meets the requirements of R645-301-240 Soils

reclamation plans.

Section 536 describes the waste rock pile reaching a height of 65 feet with a capacity of 938,207 CY of refuse, and having slopes that are 2h:1v (p. 5-29). The plan does not state a final acreage for waste rock placement within the 46 acre disturbed area.

Contemporaneous reclamation is anticipated at the waste rock site. Map 2 series states topsoil and subsoil replacement depths. A table provided in Section 252 describes waste rock area to receive topsoil and subsoil during each phase. Contemporaneous reclamation during Phase 1 is 1.28 acres. For phase 2 the contemporaneous reclamation area is 4.23 acres. Phase 3 = 5.98 acres. Phase 4 = 4.93 acres. Phase 5 = 5.42 acres. Phase 6 = 2.58 acres. That is a total is 24.42 acres of reclaimed area at the waste rock site over the six phases of operation. Section 542.100 provides a reclamation timetable for the existing lifts and each phase of operation.

Maps 8, 8A and 8B show the final reclamation topography.

Section 242.100 describes the placement of 30 inches of cover over the waste: 15 inches of topsoil and 15 inches of subsoil. The basis for this lesser cover is a forthcoming report on contemporaneous reclamation ( p. 2-23). During a discussion with Vicky Miller on October 5, 2015, the rationale or need for the lesser cover was questioned, since the plan shows an excess of 26, 934 CY in Phase 6 (Map 4 Phase 6). Ms. Miller pointed out that 30 inches of topsoil replacement depth was described in the approved plan with no subsoil cover stated. And so, it was agreed that the depth of final cover in Lift 5, only, would be a minimum 30 inches of soil which would come from the various small topsoil stockpiles already stockpiled at the site, as well as from the removal of topsoil and subsoil cover from the Phase 1 area.

For phases 1 through 6 reclamation, Section 242.100 (p. 2-24) describes variable replacement of cover from 42 inches to 54 inches depending upon topsoil and subsoil recovery during each phase of operation. Replacement depths will be confirmed by survey and as-builts will be provided (p. 2-24). An as-built survey of the volumes salvaged and stockpiled will be provided within six months completion of Phase 1.

All operational areas will be ripped to a depth of 1.5 to 2.0 feet prior to replacement of one foot of topsoil (Section 242.200). The surface of the waste rock will be left in a roughened state and the first lift of subsoil will be ripped into the waste rock to a depth of 12 inches. (Section 242.200 p 2-25). After topsoil is replaced. Samples will be taken for nutrient analysis. There will be one sample per acre to be collected and analyzed as described in Section 231.300 (p. 2-16).

A commitment to utilize all topsoil and subsoil stockpiled in final reclamation is found in Section 242.100, p. 2-24 and shown on final reclamation Map 8 and cross-section Maps 8A, and 8B. As a condition of approval, it was agreed during a meeting with Vicky Miller on October 5, 2015 that the total utilization of the 26,934 CY subsoil stockpile shown on the revised Map 8 along with the as-built stockpile volumes reported for Phase 1 would trigger the revision of subsequent projections for salvage and replacement of topsoil and subsoil in all subsequent phases.

Section 553.200 states that selected overburden materials may be used below the salvaged subsoil to provide final cover. Where overburden materials are used, the operator commits to demonstrating to the Division that the overburden materials are non-acid and non-toxic forming and non-combustible (p. 5-38). In Section 231.300, the reader is referred to a waste sampling program in Section 528. Section 528 states that mine waste will be sampled quarterly. Few further details are offered. The Division expects that sampling frequency will conform to the best practices. The commitment to bury acid toxic materials is retained. This commitment does not clearly state that acid toxic forming materials will be buried beneath four feet of material, but that is what is required by R645-301-553.252 and that is the performance standard required. Approval of less than four feet of cover is dependent on the chemical characteristics of the waste found at the final surface of each phase.

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## Stabilization of Surface Areas

### Analysis:

#### Analysis:

The application meets the requirements of R645-301-244.200, because there is a mulching plan. However, the application is not definite with regard to the type of mulch and appears to question the use of mulch in some cases. During a meeting with Vicky Miller on October 5, 2015 the requirement of R645-301-244.200 for application of mulch and the performance standards of R645-301-252 were discussed.

Section 244.100 describes the use of mulch or surface roughening or both. Mulch will be applied at a minimum rate of 1.5

tons per acre (p. 2-27). Section 341.200 states that the use of mulch will be evaluated on a case by case basis, because the use of mulch may delay seed germination. The intention of the Permittee with regard to this statement. It may be a reference to the use of hydromulch only.

During my discussion with Vicky Miller on October 5, 2015, I explained that straw or hay mulch as a reclamation treatment is an important erosion control method and if incorporated into the soil, mulch will not impact seedling establishment (Practical Guide to Reclamation in Utah, 2000). The plan must not waiver on the use of mulch for erosion control and soil stabilization.

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