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February 12, 1988

TO: File
FROM: James Leatherwood
Re: Coal Waste Disposal, December 18, 1987 Submittal, Summit Coal Company, Boyer Mine, ACT/043/008, Folder No. 2, Summit County, Utah

Abstract

The above mentioned submittal has been reviewed and found not to be technically adequate. Topsoil removal, protection, and redistribution and waste disposal issues are discussed below.

UMC 817.22 - .25 Soil Management - JSL

Topsoil Removal

The plan does not adequately meet UMC 817.22. All topsoil materials must be removed in a separate layer from the area to be disturbed. All subsoil materials are to be removed and segregated separately. The depth of topsoil removal must be specified in the plan. The soil survey for the proposed area indicates that a Bezzant Gravelly loam and a small amount of Moweba Gravelly loam exist. The topsoil depth of the soil is approximately seven inches. It is advisable to commit to removing a minimum of seven inches of topsoil material.

Topsoil Storage

The plan does not adequately meet UMC 817.23. All stockpiled topsoil must be selectively placed on a stable surface in the permit area and be protected from wind and water erosion, unnecessary compaction and contaminants. The topsoil cannot be stockpiled in a berm due to the high potential for water erosion and contamination from eroded acid-or toxic-forming materials.

The removed topsoil must be stockpiled at a site that will not be disturbed and will be protected from contaminants. The stockpile should not be a mix of topsoil and subsoil. The topsoil and subsoil should be stockpiled separately. The plan must address the specific measures that will be used to insure protection. These measures should include plans, cross-sections volumes, designs and maps of the following:

- 1) Location
- 2) Drainage diversions
- 3) Stockpile dimensions (include max and min slopes)
- 4) Biological stabilization (include rate and seed mix)
- 5) Compaction mitigation.

The use of the upper subsoils for a berm is adequate if another incised berm/drainage will be implemented around the perimeter of the waste backfill. The runoff from the waste material should not come into contact with any growth medium. The runoff will most likely contain toxic levels of boron. If this will not be implemented then I recommend a double berm in which the upper two feet of subsoils is removed first as an outside berm, then the remaining subsoils to removed and placed as the inside disturbance area berm.

Soil Redistribution

The plan does not adequately meet UMC 817.24. The submittal did not segregate the topsoil from the subsoil so no topsoil redistribution plan was established. A general soil redistribution plan was discussed. However, topsoil must be removed and stored separately from all subsoil. A redistribution plan is required. The plan should include:

- 1) Subsoil scarification prior to topsoil redistribution (include depth of scarification)
- 2) Expected depth of topsoil redistribution.
- 3) Topsoil compaction mitigation (Division recommends incorporating alfalfa at a rate of 1 ton per acre tilled in the upper acre slice).
- 4) Length of time between topsoil redistribution and seeding and mulching (if seeding will not occur for longer than one month some type of soil stabilization plans are needed.
- 5) The site should be left in a rough condition.
- 6) Redistribution should be carried out when the soil is dry.

The final total depth of soil redistribution is dependent upon the acceptance from the operator to the Divisions change in the backfilling and treatment of the acid- or toxic forming material. If the applicant advocates for the use of a 12 inch clay layer then the proposed four feet of soil redistribution will be adequate. If the no clay cap is placed on the waste then a total of five feet of material must be redistributed.

Topsoil Testing and Amendments

Prior to any site disturbance, the topsoil and subsoil must be sampled and analyzed for the following: Texture, CaCO_3 %, pH, available phosphorus, electrical conductivity saturation percentage and potassium. The rate of sampling should be one sample every acre with a minimum total of three samples. The depth should be a composite of the upper seven inch soil depth and a composite of the soil between seven inches and 48 inches.

After redistribution (ie. final reclamation) the soil materials should be evaluated for fertilizer and other amendments as necessary.

UMC 817.103 Backfilling and Grading: Covering Acid- And Toxic-Forming Materials - JSL

Due to the hydrologic problems associated with encapsulating acid-forming materials, the floor of the backfill site should not be lined with clay but should be lined with the required amount of CaCO_3 equivalent. Based on the data submitted, sampled October 29, 1987, the required amount of CaCO_3 equivalent would be between 23.13 to 25.94 tons of CaCO_3 /1000 tons of proposed backfill waste material. Thus the floor will be lined with CaCO_3 equivalent and the waste material would be backfilled on top of the CaCO_3 equivalent material.

The Division also recommends that the clay liner not be placed on top of the waste if the applicant would redistribute a total of five feet of soil materials. Five feet of material is required to insure that the vegetative root growth does not come into significant contact with the waste material. Again, the boron is highly toxic and would cause substantial vegetative damage if the vegetation is impacted by the waste materials.

cc. R. Harden
S. Linner
R. Summers

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