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August 19, 1986

TO: Technical File

FROM: James Leatherwood, Reclamation Soils Specialist JSL

RE: Determination of Completeness and Technical Analysis Review, Summit Coal Company, Boyer Mine, PRO/043/~~002~~ 008, Folder #2, Summit County, Utah

GENERAL

Various submittals and revisions from Summit Coal have been reveiwed by the Division. The present exploration & reclamation plan has been reviewed as Summits Coal Boyer Mining and Reclamation Plan (MRP). Understandably, this information contains outdated and insuffecient information to develop a cohesive MRP for Division review. The applicant may find the following comments useful in developing an acceptable MRP for the Boyer Coal Mine. One overall comment is necessary at this time. Throughout the entire reclamation plan there is a lack of definitive commitment. The Division recognizes that updated new technology will be available to the operator for future reclamation planning, however the reclamation plan must be a definitive commitment by the operator describing exactly what techniques and operations that would be used today for final reclamation. Statements such as "should be done" must be avoided in the MRP.

BODY

UMC 783.21 Soil Resources Information - JSL

The soil series legend on the Soil Map Plate 8-1, 2B and 3G, does not correlate with the soil survey labels 1B and 2G (Moweba gravelly loam and Richville loam soils, respectfully). Please Amend.

UMC 784.13 Reclamation Plan: General Requirements - JSL

(b)(5)(iii) In the October 10, 1984 Exploration Mine Review (EMR) response, Appendix 3, Reclamation Plan, Phase 3, Site Preparation, Figure 9-1 delineates shrub planting parrallel to a highwall on the upslope of a steep slope. Due to the increased probability of the upslope soil highwall failure and erosion, this is an unacceptable planting technique.

(b)(7) The applicant states that there is no acid- or toxic-forming materials on site. However, data submitted in previous EMR responses indicates a sulfur content of 0.17 to 4.20 percent (American Chemicals and Research Laboratories). Based on this information the coal material has an acid production potetial (APP) equal to -5.3 to -131.25 tons $CaCO_3$/1000 tons of material. An Acid Base Potential (ABP) of -5 tons $CaCO_3$/1000tons of material is defined as an acid or toxic forming material. However, to fully determine the ABP one must also look at the neutralization potential (NP). The ABP is then determined by the following: ABP= APP - NP where units are in tons $CaCO_3$/1000 tons material equivalence. The NP analysis has not been determined for the prospective coal material. Due to the variablity of sulfur in the coal, the Division recommends that the operator sample the roof, mid-seam, and floor after every 10,000 tons of mined coal. All acid and toxic forming materials must be in compliance with UMC 817.48 and UMC 817.103

UMC 817.22 Soil: Removal - JSL

Throughout the reclamation plan and the EMR response, the operator has commited to various topsoil and subsoil removal depths. The operator has committed to a twelve inch topsoil and six inch subsoil redistribution depth. However at no time has a soil mass balance table or a specified depth of soil removal been presented. The applicant states in the October 10, 1984 EMR response, that the volume of usable soil is presented in Plate 8-1a. Plate 8-1a was not submitted. The operator must submit a soil masss balance table. This table should be in an accountant like fashion, ie. credit and debit soil volumes. The exact acreage disturbed, the depth of removal, the volume of topsoil removed and stockpiled, the volume of subsoil removed and stockpiled and the location, acreage, and depth of postmining reclamation soil redistribution, must be included in this table.

The applicant must answer the previous reviewers comment UMC 817.22, Soil: Removal - TLP, which stated "What is meant by the statement on page 7 of the November 13, 1984 response..."A large portion of the area will not be disturbed until such time as reclamation commences"". Is this a borrow area? Please submit a narrative as to the operative and reclamation plan for this area. Include premining and postming cross section, and delineate the location on the surface facilitites map.

UMC 817.23 Soil: Storage - JSL

In the reclamation plan the operator commits to prevent the establishment of noxious plant species. On July 03, 1986 Lynn Kunzler and James Leatherwood of the Division visited the Boyer mine site. It was evident that vegetation establishment and Weed control has not been successful at that time. The Division recommends that the topsoil stockplile be sprayed in the spring with a herbicide and revegetated with the enclosed interim seed mix.

UMC Soil: Redistribution - JSL

The operator must develope a cohesive soil redistribution plan throughout the MRP.. The current exploration plan and approximate revesions have various descrepant soil redistribution depths (ie. EMR response, October 10, 1984, pg. 7, Appendix 3, Reclamation Plan, pg. 9-7 and in the Technical Adequacy response). The Division has accepted the commitment by the operator to redistribute six inches of subsoil and twelve inches of topsoil. This redistribution depth must be adhered to until such time that the Division is provided with technical data that identifies reclamation success with a lesser depth of soil. This may be accompolished through experimental test plots. The operator must consult the Division in this matter.

The EMR response dated September 07, 1984, Redistribution of Soils, last sentence of paragraph four states that tillage will protect the redistributed topsoil from wind and water erosion. This must be deleted from the Permit. Unfortunately, the weight of research shows that tillage actually increases soil unstability.

The Division does recommend tilling the top six inches of redistributed topsoil to elleviate compaction. The Division also recommends tilling in 0.75 ton of alfalfa placed at a six inch depth into the subsoil material prior to topsoil redistribution.

The operator must commit to redistribute the soil material only when the mass water content is less than fifty percent of field capacity and insure that the redistributed soil is reseeded and mulched in less than a one week period. If this is not possible, the operator must develop and describe what means will be used to insure soil stability.

UMC 817.25 Soil: Nutrients and Amandments - JSL

An issue has been raised between the previous reviewer and the operator. The specific issue dealt with effectiveness of ripping as a means to adequately distribute the fertilizer throughout the soil. A determination to this issue cannot be resolved until the operator defines and commits to a specific fertilizer management plan. The Division has reviewed the fertilizer recommendation rate submitted by Native Plants Inc. The following is an approvable fertilizer management recommendation based upon Native Plants recommendation. The following plan is based on a broadcast distribution of a granular fertilizer with Division personnel on site at the time of application. The fall application should conist of Urea for the nitrogen requirement, diammonium phosphate for the phosphate requirement and potassium sulfate for the potassium requirement. The spring fertilizer program should consist of diammonium phosphate and potassium sulfate. Based on the applicants fertilizer recommendation (Appendix 3, Reclamation Plan, pg. 9-9) the following fertilizer and rate is recommended:

		Rate (lb/ac)	
Fertilizer Type	Analysis	Fall	Spring
Urea	45-0-0	111	0
Diammonium phosphate	21-53-0	142	47
Potassium Sulfate	0-0-52	75	25

The potassium rate has been reduced from that recommended, due to the usual inherent supply of potassium in these soils. The operator must change the potassium recommendation of K_2O_2 to K_2O. The following corrections must also be made: 1.) Samples 1A, 1B, 2A, 2B, and 3 sodium adsorption ratio values must be corrected to 0.38, 0.56, 0.41, 0.40, and 0.40 respectfully. 2) Texture must be corrected in samples 1A and 1B to read as a Clay Loam.

Other Nutrient and Amendment changes in the MRP should include: 1) eliminating the fertilization application with the mulch, 2) Change the post mining reclamation soil sampling scheme from composite sampling to individual site sampling, composite sampling tends to dilute the soil samples, and 3) The following must be analyzed at the time of final recalamation: pH, electrical conductivity, potassium, zinc, iron, avialable phosphorous and texture.

UMC 817.101 Backfilling and Grading: General Requirements - JSL

Many types of soil stabilization techniques have been discussed by the operator, ie. cut faces, terraces, and basins. The Division requires that the operator commit to a specific plan, and delineate the appropiate plan on the final reclamation map. Once a specific soil stabilization technique is decided upon, the operator must

submit all pertinent technical information. For instance, if basins are to be employed, what equipment will be used, at what time will the operation take place in respect to other operations, what is the design criteria (ie. depth and general shape). The Division also request the operator to define the grouser operation from the revised reclamation plan in the technical Adequacy response (undated).

UMC 817.106 Regrading and Stabilization of Rills and Gullies - JSL

The operator must commit to fill (with topsoil), regrade, and seed all rills and gullies before they regrade to a depth of nine inches.

jvb
cc: S. Linner
B Team
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