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March 18, 1987

TO: File

FROM: James Leatherwood 

Re: Determination of Completeness Review, February 27, 1987  
Submittal, Utah Fuel Company, Skyline Mines, ACT/007/005,  
Folder #2, Carbon County, Utah.

The February 27, 1987 resubmittal has been reviewed. The plan contains several deficiencies. The following concerns must be addressed prior to completeness approval.

UMC 783.21 Soil Resources Information - JSL

The portal surface facilities soil survey map found in the Skyline Project Supplement Soils Report, supplement to Soils and Vegetation Appendix A-2, does not correspond to the Portal Yard Soil Survey, Plate 2.11-1 Vol. 1 and Map D of the Soils and Vegetation section of Appendix A-2. These two plates must correspond to each other. The applicant has included various soil profile descriptions for the rock waste disposal area. However, no soil map was included. Please submit.

UMC 783.25 Cross-Sections, Maps, And Plans - JSL

Page 4.3, Section 4.11 of Volume 3 inadvertently refers to Map 3.2.8-2 for final contours of the rock disposal site. Map 3.2.8-2 contains the rock waste disposal area cross-sections, not final contours. Please amend.

Technical Deficiencies

UMC 817.48 Hydrologic Balance: Acid-Forming And Toxic-Forming  
Materials - JSL

Pages 3-61 and 4-42 state that no acid-forming or toxic-forming materials are anticipated at the Skyline Mines. Section 4.16 states that an analysis has been ran to insure that the underground development waste materials are not acid-forming or toxic-forming materials. The applicant list data in the supplemental to the Hydrology chapter Appendix A-1, the Geology chapter page 45-47 Appendix A-3, Table 2.2.8-2 page 2-18 and Table VIII (summary of sulfur form analysis) page B-12 of the Geology Chapter.

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The Division finds that the presented data does not adequately reflect the previous determination that the underground waste materials are not an acid-forming or toxic-forming material. To determine if the material is acid-forming, the acid base potential must be quantified. The percent total sulfur can be used to calculate the acid production potential. To accurately quantify the acid base potential the neutralization potential (NP) must be known. The NP is derived from the percent calcium carbonate of the material (see attachment A). Furthermore, analysis of other components necessary to develop a negative determination for toxicity was unfortunately neglected in past reviews. To fully characterize the underground development waste the following parameters should be analyzed: pH, electrical conductivity, sodium adsorption ratio, texture, selenium, and boron.

As reflected in section 4.16 the applicant states that the waste material from the sediment pond will be analyzed for toxicity prior to disposal in the rock waste disposal area. The applicant has not detailed what analysis would be run to determine whether the materials are toxic. The Division advises that the above stated parameters be analyzed for this determination.

jvb  
cc: R. Harden  
S. Linner  
0534R-67

Attachment A

Acid Base Potential

D(3) The acid base potential must be quantified for all underground development waste and overburden materials. The acid base potential is determined by calculating the difference between the neutralizing potential (NP) and the acid potential (AP). Both the neutralizing and the acid potential should be determined as prescribed in Table 7, for total sulfur (AP) and carbonates (NP). The acid potential should be reported as % S and the neutralizing potential as % CaCO<sub>3</sub>.

The AP and NP must first be converted to tons CaCO<sub>3</sub>/1,000 tons overburden material.

1.  $AP = \% S \times (31.24) = \text{tons CaCO}_3/1,000 \text{ tons material.}$
2.  $NP = \% \text{CaCO}_3 \times 10 = \text{tons CaCO}_3/1,000 \text{ tons material.}$
3.  $ABP = NP - AP$

The results of the evaluations should be integrated into the mine plan so that the applicant can demonstrate their capability to assure that all coal and toxic- and/or acid-forming material is disposed of in a manner that will prevent environmental degradation. A reclamation plan shall be formulated, using the overburden analysis, demonstrating that toxic- and/or acid-forming overburden material will not prevent surface reclamation and revegetation or the reestablishment of the quantity and quality of surface and ground water.

A total cover depth of four feet or more of nontoxic materials must be placed over all coal and acid- and/or toxic-forming materials. The location of each disposal site, affiliated stream channel and slope(s) must be delineated on a topographic map. If a compaction layer is used, then identification of this material including the permeability rates and the bulk density along with design and operational plans for this activity should be presented. If neutralization of the problem material is desired, the applicant must describe the degree of neutralization, the neutralizing material, the NP of the material, amount required, placement, equipment and procedures to insure the neutralizing process.

Table 7. Recommended Laboratory Methods

PARAMETERS	REPORTED AS	SUGGESTED METHODS
pH		ASA Mono. No. 9, Part 2, (2 ed), 1982. Method 10-3.2, page 171. Perform pH on saturated paste.
Electrical Conductivity (ECe)	mmhos/cm 25°C	ASA Mono. No. 9, Part 2 (2 ed), 1982. Method 10-3.3, pages 172-173.
Saturation Percentage	%	SP = 100(total wt of water)/ (wt of oven-dry soil). Wts of water and soil known when making a saturated paste.
Partical Size Analysis (texture)	% sand, silt, clay	Hydrometer method. Black et al. 1965. Methods of soil analysis. ASA Mono No. 9, Part 1, method 43-5, pages 562-566.
Soluble Ca, Mg and Na	meq/l	ASA Mono. No. 9, Part 2, (2 ed), 1982. Method 10-3.4. pages 173-174.
Sodium Adsorption Ratio	SAR calculated from soluble Ca, Mg & Na (meq/l)	$\frac{[Na^+]}{([Ca^{2+} + Mg^{2+}]/2)^{0.5}}$
Selenium	mg/Kg	Extraction by ASA Mono. No. 9, Part 2 (1 ed), 1965. Method 80-3.2, page 1122. Analyze by Hydride generation for AA or ICP. ASA Mono. No. 9, Part 2 (2 ed), 1982. Method 3-5.5, pages 59-61.

Table 7. (continued)

PARAMETERS	REPORTED AS	SUGGESTED METHODS
Total N	%	ASA Mono. No. 9, Part 2 (2 ed), 1982. Method 31-3, pages 610-616.
Nitrate-N	mg/Kg	ASA Mono No. 9, Part 2 (2 ed), 1982. Methods 33-4.1, pages 643-645; 33-8.3, pages 679-682 or Sims J. R., and G. D. Jackson. 1977. Soil Sci. Soc. Am. Proc. 35:603-607.
Boron	mg/Kg	ASA Mono No. 9, Part 2 (2 ed), 1982. Method 25-9.1, page 443 for extraction and Mehtod 25-5, pages 443-446 for analysis.
Total Sulfur (acid potential)	%	US EPA. 1978. EPA - 600/2-78-054. Method 3.2.4, Page 51.
Carbonates (neutralization potential)	%	US EPA. 1978. EPA - 600/2-28-054. Method 3.2.3, page 47.
Organic Carbon	%	ASA Mono No. 9, Part 2 (2 ed), 1982. Method 29-3.5.3, pages 571-573.
Exchangeable Sodium*		ASA Mono No. 9, Part 2 (2 ed), 1982. Method 13-4.4, pages 238-241. Using Flame Emission and using extractates in method 8-3, page 152.

Acid/Base Account AB = Total Neutralizing Potential minus Total Acid Potential.

\*If samples have a SAR greater than 12 for clay textured soils or greater than 15 for sandy textured soils, then exchangeable sodium % should be analyzed.