



355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 19, 1988

To: Sue Linner, Permit Supervisor/Reclamation Biologist

From: James Leatherwood, Reclamation Soils Specialist

Re: Determination of Completeness and Technical Adequacy,
Centennial Project, Andalex Resources, ACT/007/019, Carbon
County, Utah

Abstract

The revised permit application package (PAP), received March 25, 1988, has been reviewed for completeness and technical adequacy. The operator has sufficiently addressed this reviewer's previous completeness concerns as outlined in the January 21, 1987 completeness review document. Therefore the submittal is considered complete.

The submittal adequately addresses all previous technical concerns except one. The submittal fails to adequately characterize the acid- or toxic-forming potential of the roof and floor materials. The submittal will be considered technically adequate when the roof and floor materials have been characterized as defined in the Soil and Overburden Guidelines for Surface and Underground Coal Mines.

The submittal also indicates that a large deficit in topsoil exist. This is discussed in further detail under the Aberdeen development review memo, dated May 18, 1988.

Analysis

The PAP contends that there is no acid- or toxic-forming materials. No physio-chemical data has been supplied to the Division to verify this finding. According to the data from two sample points, submitted in the April 13, 1987 PAP submittal, Chapter IV, II Laboratory Analysis and discussion by Jim Robbins of Camp, Dresser, and McKee, the roof and floor materials may be considered an acid- or toxic-forming. The acid base potential was calculated to be -6.35 and -5.26 tons CaCO₃/1000 tons material for samples 2 and 12, respectively. There was not sufficient data to determine the acid base potential of the other samples.

Page 2
S. Linner
ACT/007/019

As noted previously (August 19, 1987 Deficiency Review), Jim Robbins stated that "Samples 2 and 12 were found to have low pH values and significant quantities of pyritic sulfur...", and "It is highly likely that variations in the amount, size and degree of pyrite oxidation can account for most of the variation in chemical composition in these samples".

The Division requested further analysis of the roof and floor materials to adequately determine the potential presence of acid- or toxic-forming materials. This information has not been submitted. Therefore the Division has determined from the limited available data that the roof and floor materials and possibly other underground development waste shall be considered as potential acid- or toxic-forming materials. The exact physio-chemical characteristics of the acid- or toxic-forming material must be quantified to determine the extent of such materials and to determine an adequate management plan to mitigate any potential adverse effects to water quality.

According to the PAP no underground development waste will be disposed of outside of the underground workings. Therefore there exist only an probable potential impact to the ground water resource.

Recommendations

The exact physio-chemical characteristics of the acid- or toxic-forming material must be quantified to determine the extent of such materials and to determine an adequate management plan to mitigate any potential adverse effects to water quality.

To characterize the potential effects to the groundwater system, the waste materials must undergo further analysis. This analysis would be two fold. The first analysis would be to chemically determine the percent of CaCO_3 and the percent of non-sulfate sulfur in the material. The non-sulfate analysis should be fractionated into pyritic-sulfur, and organic-sulfur. The second leg of the analysis would be a column leach/weathering analysis. These test will aid in determining the Divisions physio-chemical findings of the underground development potential impact to the ground water resources and in any determining any potential mitigation measures that may be required.

JL/as
cc: D. Darby
R. Summers

0534R84-85