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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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September 25, 1995

TO: Daron Haddock, Permit Supervisor

FROM: Sharon Falvey, Senior Reclamation Hydrologist *SKF file*

RE: Reclamation Plan Amendment, Received Aug. 8, 1995, J.B. King Mine, Western States Minerals, ACT/015/002-94C, File #2, Emery County, Utah

SYNOPSIS

This amendment contains an erosion monitoring plan and other hydrologic aspects of the reclamation plan. I have been requested to review the "Erosion Control Section" of this amendment. It is therefore assumed all other aspects have been previously reviewed.

ANALYSIS

The Erosion Monitoring Program for the reclaimed J.B. King Mine is based on a series of on-site and off-site erosion monitoring transects and an on-site recording rain gauge.

A photographic record will be obtained on the site for each transect. Data will be collected twice for the first two years after installation, probably in the spring and fall. If data is collected at different times of the year the results may be influenced by changing conditions, such as: seasonal precipitation events and vegetative phase.

The applicant has installed a recording rain gauge and commits to collect data for the next two years if the Division will commit to download the data. The Division has agreed to assist the applicant in obtaining this data. The applicant has indicated they may discontinue the recording rain gauge and data logger if the applicant feels further collection is unrealistic.

The basis for retention of the rain gauge is to determine the relation of erosive activity to rainfall events. The extent and potential amount of erosion is largely driven by the intensity and duration of such events. The continued use of this instrument will aid in correct interpretation of erosion conditions occurring on-site.

Off-site transects are proposed to be established and monitored on a similar schedule as the on-site transects. The applicant has stated that the comparison of off-site and on-site data will be used for bond release. The off-site data is proposed to be used to



establish "Normal Erosion" as defined in the *Technical Method for Evaluation of Erosion on Reclaimed Coal Lands in Western United States*. Normal Erosion, as defined in this document, is erosion which does not greatly exceed natural erosion and does not occur at a rate which is greater than the rate of soil mantle formation by natural weathering processes. In order to determine if the site chosen is a "normal" erosion rate the applicant would have to first define the "natural erosion rate" and the rate of soil formation.

In order for the applicant to have a valid comparison of on-site transects to off-site transects the following site conditions must be comparable: total cover, similar percentage of rock litter and similar vegetation type; watershed drainage area; soil characteristics and outcrops in the watershed; land form; aspect; precipitation characteristics; anthropogenic characteristics. All of these factors can affect the rate of erosion on a site. Unless the applicant can determine the natural erosion rate, determine what the rate of soil mantle formation is, and find a site which provides similar characteristic components, the on-site data will not be comparable to off-site data in the manner described by the applicant.

FINDINGS

The Division may choose to use only the reclaimed site information in the Bond Release Determination. How erosion from the reclaimed site responds to precipitation events and recovery from erosive events will aid in determining whether the erosive rate at the site is suitable for the postmining land use.

At this point in time it is the Division's determination that if current erosive conditions on the site do not degrade further and that cover over the refuse has stabilized with no exposed refuse, the on-site erosion will not be detrimental to achieving the standards for reclamation success for postmining land use and vegetative establishment. The proposed on-site monitoring would assist the Division in making the determination of reclamation success.

RECOMMENDATION

Amendment 94C may be incorporated into the MRP for approval of the proposed on-site monitoring. The proposed on-site monitoring would assist the Division in making the determination of reclamation success. However, the off-site monitoring by the method identified would require additional clarification prior to acceptance as a tool to be used by the Division. 1) Define the "natural erosion rate" and the rate of soil formation for the site. 2) Demonstrate site specific elements affecting erosion off-site are comparable to on-site characteristics.

cc: Susan White
JBKINGER.TA