



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

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Memo to: File

Memo From: Tom Munson 

Re: J.B. King Mine, Reclamation Plan Revision, ACT/015/002, File Folder #2, Emery County, Utah

Hydrologic Resources

Reclamation Plan Analysis

The operator has surveyed the adjacent channels to understand the regional hydrology, determining the range of controlling channel characteristics within the region (i.e. bottom width, top width, channel top width, width of channel meander). By using this information to set boundaries and design parameters, the operator has proposed a channel design characteristic of the regional hydrology. The surveyed channel characteristics are spelled out on pages 9 and 10 for the South Drainage Channel. The proposed channel design and analysis is found on pages 10 and 11 and in figure JBK-6 and was based on representative values taken from site-specific field data confirmed in the field by the Division.

Sampling and Analysis

The guide to performance of these designs for the main channel will be if they maintain a stable profile as found in the area and shown on figure JBK-9. The channel must stay within the meander limits as shown on Figure JBK-7. A drilling program will be initiated to determine the presence of acid and toxic-forming materials within the corridors delineated for the channels proposed herein. Approximate locations of the drill holes are shown on Drawing JBK-3 and Drawing JBK-7. This will allow the Division to make a finding that any materials eroded from the channel area will not be deleterious.

A new ditch, the ledge toe ditch, will be constructed at the base of the cliff which surrounds the property, as added insurance against erosion, by capturing the



erosive energy of the water which cascades over the cliff so it can be collected prior to flowing downslope. This will hopefully prevent future erosion in the area between the main channel and the refuse pile. A caution needs to be applied to this ditch, in regards to, it being installed far enough away from the cliff face so that does indeed capture the water cascading over the cliff face. This decision can be made in the field.

Erosion on the face of the refuse pile has been addressed by proposing that rock mulch be used to abate erosion and enhance vegetation with addition of sewage silt. Some data exists which suggests application rates of 2 inches of clean angular gravel and smooth slopes are the most appropriate methods of applying gravel mulch. This information was derived from Mr. Larry Caudhill, Supervisor of Field operations, for the city of Albuquerque, New Mexico. He has direct experience with the application of gravel mulch on steep slopes and erosive soils. Seeding of the gravel mulched areas was done using half the seed below the mulch and seeding half the seed above the mulch. Mr. Caudhill's experience with installing gravel mulch involves use of corrugated roofing panels laid down the slope. The gravel is applied from the top of the slope and allowed to cascade down the panels. The panels are removed one at a time and the gravel is hand raked.

The use of a land imprinter is also suggested as an option to pursue in areas where soil will be ripped and planted again. Once again, data exists which suggests that this methodology would potentially add in revegetation based use in other desert areas where water harvesting is a problem. The imprinting foundation of Tuscon, Arizona has done a lot of work in revegetation of desert areas and could be a resource worth investigating.

The plan still lacks a means of monitoring erosion in the future and the operator should consider using cross contour transects and photographic documentation surveys of erosional sites as a means of collecting data and presenting it in the Annual Report as support for Phase II bond release.

Recommendation

The plan be approved and the measures be implemented as described after the collection of the field data this spring. Since it is appropriate to seed in the fall, then it is my recommendation that the recommended field data be collected this spring and the actual earthmoving occur in the fall. The plan meets the requirements of rules by meeting the requirements of R645-301-741, -742-300, -762.100 and -762.200. The plan attempts to minimize erosion to the extent possible and provides for a stable natural drainage channel. Guidelines for drainage planning were established by using data collected from the natural drainage systems and from known physical dimensions of the drainage area being recontoured. The drainage pattern, which will be recreated, will be in equilibrium with the slope and fluvial processes by using characteristic form.