



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

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TO: File

FROM: Tom Munson *Tm*

RE: Tank Seam Permit Application, Co-Op Mining Company,
Bear Canyon Mine, ACT/015/025-93B, File Folder #2,
Emery County County, Utah

The Tank Seam access road is 3000 feet long, 9-16 percent, page 3D-7. The slopes in the area are generally steeper than 20 degrees and the average natural angle of the slopes that the Tank Seam access road must traverse is 35 degrees. Drainages are in excess of 100 percent. The material to be excavated consists of fine to coarse gravel, cobble, and boulder-sized pieces of sandstone in a matrix of sand and clayey silt. These are the general environmental parameters found in the Tank Seam Area.

BTCA Plans

The whole disturbance is treated by other "BTCA" and not siltation structures. The majority of BTCA areas described in the PAP are given the following treatment: "erosion and sediment will be controlled by the placement of erosion control matting on the slope until a good vegetative cover is established", (Proposed BTCA areas-H,I,J,K,L,M,N,O). It has not been determined how successful the operator will be at establishing a good vegetative cover in Appendix 7-K. When the average cover is more than 80 percent, vegetation and rock are an acceptable erosion treatment. But this ignores an assessment of stability regarding erosion on reclaimed areas. This assessment will be made at the time the vegetative criteria is met, and the formal proposal is submitted to the Division for removal of supplemental structures.

According to Charles Reynolds, Susan White approved vegetative criteria for BTCA areas in 1992. This is found in Appendix K, pages 7K-2 and 3. According to Susan White, Hugh Klein approved the BTCA procedure in the existing PAP for removal of supplemental structures. The use of silt fence in other BTCA areas is acceptable only on flat areas at the toe of the slope due to storage and treatment of runoff. But it is not prudent from an engineering standpoint on extremely steep slopes.



Reclaimed Drainages

The plan does not address the portal access road reclaimed drainages in enough detail to make a finding that they will be designed, located, constructed, and maintained to be stable. The plan states that designs for reclaimed drainages RC-1 through 6 found in Appendix 7-h will suffice for an entire watershed drainage. The plan ignores site-specific criteria and uses globally applied criteria on a watershed by watershed basis.

The steepest slope of the installed culverts taken from the table which lists culvert characteristics on page 7G-24A is 100 percent. Five culverts are installed with outlet protection varying from 30-inch riprap to 15-inch riprap. This is not stable engineering design. Any riprapped, reclaimed channel in this environment has a strong probability of failure because of the forces which affect the riprap. The existing channels are steep-sloped gullies. The operator's proposal to establish a riprap channel on the steep slope is outside standard stable engineering practices. A return to the original channel configuration is more realistic and stable in this environment. But it has to be based on documentation of the existing channel recreate the configuration without adversely affecting reclaimed fills adjacent to the channel.

Recommendation

The plan presents many questions regarding **stability**. Reclaimed slopes greater than the angle of repose and reclaimed drainages at 1:1 slopes are very questionable from a stability standpoint. If the operator designs a plan which addresses these unique issues adequately, a permit might be granted. It is my opinion that slopes of this nature are not stable in their native state and certainly not when they are disturbed and then replaced without vegetation.

If the vegetation can be established, will it be adequate to stabilize these extremely steep reclaimed slopes? The question has not been adequately answered. The Division should consider this permitting action to be outside the boundaries of standard engineering practice and require additional assurances of technical adequacy.