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

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June 16, 1997

TO: File

THRU: Daron Haddock, Permit Supervisor *DH*

FROM: Jess Kelley, Reclamation Specialist *JK*

RE: North Rilda Deficiencies, PacifiCorp, Deer Creek Mine, ACT/015/018 97-1, Folder #2, Emery County, Utah

SUMMARY:

On February 4, 1997, the permittee submitted this permit revision for Division approval. The Division found a number of deficiencies in that submittal. On May 14, 1997, the permittee submitted material intended to correct the deficiencies found in the original. This memorandum constitutes this writer's review of the May 14 submittal. It is written in a form in which it can be inserted directly into the approved Technical Analysis (TA).

TECHNICAL ANALYSIS:

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Subsidence control plan.

The subsidence control plan for the North Rilda Lease Extension incorporates 5 principles: 1) subsidence monitoring, 2) the use of longwall mining methods, 3) the establishment of large longwall panels, 4) the leaving of permanent barrier pillars, and 5) the use of yielding pillars between longwall panels.

Subsidence monitoring will be done exclusively by aerial photogrammetric methods. The yearly monitoring program already in use at the Deer Creek mine, as well as other adjacent mines owned and operated by the permittee, will simply be extended to include the lease extension area. Elevations are measured to a precision of ± 1 foot and the data are so abundant that they can be and are used to draft extensive isogrametric subsidence maps of the area being mined. These maps and the data upon which they are based have been very useful to both the permittee and the Division in monitoring and predicting subsidence.

As has been discussed, wherever practicable, longwall methods will be used. By allowing for vast and relatively uniform subsidence, longwall mining minimizes not only surface damage, but also damage to aquifers and other subsurface features.

Longwall panels have been designed to be as large as possible. The larger the panel, the less the extent of peripheral surface damage relative to the total area subsided.

Where necessary, permanent protective barrier pillars of coal will be left. These barrier pillars will be located on the basis of the angle of draw, which has been determined to be 18° in this area, and the depth of cover in a particular area. Property boundary pillars will be left to prevent subsidence from extending beyond the permit area. Pillars will be left to protect the South Castlegate escarpment, which lies on the north side of Rilda Canyon and which has significant vertical exposure. Pillars will be left to protect the riparian areas in both forks of Rilda Canyon from subsidence. Only entry development, and no pillar extraction or second mining, will take place in these pillars.

Last, those pillars which are left between longwall panels for entry protection have been designed to yield, or crush out, with time. This means that unsubsidized ridges between panel subsidence troughs will be eliminated or lessened. Like the large longwall panels, this will make for more extensive and uniform subsidence and thus lessen damage to both surface and subsurface features.

The U.S. Forest Service (USFS) reviewed the plan for mining the North Rilda Lease Extension. On March 7, 1997, USFS sent a letter to the Division, outlining a number of deficiencies in the plan, the correction of which would be necessary before it (USFS) would allow mining beneath the escarpments of Mill Fork Canyon and Rilda Canyon, or even entry development beneath the right fork of Rilda Canyon, to proceed.

The deficiencies set forth by USFS have to do with the potential for subsidence. They center around 2 problems.

1) First, USFS fears that the development of entries beneath the riparian area and alluvial deposits in the right fork of Rilda Canyon might, at least in the long run, cause subsidence damage to the riparian area and to the water-bearing capacity of the alluvial deposits. In turn, this might cause a diminution in the quality or quantity of water in nearby springs that are owned by the North Emery Water Users Association.

In order to address USFS's concerns about the stability of the riparian area and alluvial deposits above the proposed entries, the permittee did a stability analysis of both the proposed entry pillars and the overlying strata. The analysis is found in Appendix 1. The analysis indicates that the stability safety factor of the proposed entry pillars ranges from 3.57 at the edges of the canyon, where the overburden is over 600 feet thick, to 23.94 in the middle of the canyon, where the overburden, at 99 feet, is shallowest. The beam analysis of the strata which will overlie the entries indicates for them a stability safety factor of 4.92. The Division is satisfied that these large stability safety factors guarantee that the proposed entries will be stable over the long run.

2) Second, the stipulations of the North Rilda Lease agreement prohibit subsidence damage to the escarpments in Mill Fork and Rilda Canyons.

The escarpment in Mill Fork Canyon is very small. In a June 10, 1997 letter to the Division, USFS stated that it is willing to allow mining in that area through a categorical exclusion, which would eliminate the necessity of an Environmental Assessment (EA). The permittee has done a comparative study of this area and the south side of Rilda Canyon, which has been completely mined out. These areas are very similar. This study is found in Appendix 1. It indicates that the probability of major, or even noticeable, subsidence damage on the south slope of Mill Fork Canyon is very slight.

The escarpments in Rilda Canyon, on the other hand, are high and quite extensive. Mining in this area, which might pose a threat of subsidence damage to those escarpments, is thus subject to a full EA. The permittee is conducting subsidence studies in other, similar areas, namely Cottonwood Newberry Canyon, Corncob Wash, and Trail Mountain. The permittee commits to using the data from these studies to predict the effects of subsidence on the escarpments of Rilda Canyon.

The layout and location of the entries and the longwall panels is the subject of ongoing study by the permittee and negotiation between the permittee and USFS. The permittee must design the subsidence control plan to the satisfaction of USFS before entry development and mining can proceed.

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Findings:

The plan fulfills the requirements of this section. However, in accordance with R645-300-122, the permittee must design the subsidence control plan to the satisfaction of USFS before entry development and mining can proceed.

RECOMMENDATION:

It is recommended that this permit revision be approved, subject only to the stipulation that the permittee get the approval of USFS before proceeding with entry development and mining, as discussed above.

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