0009

Norman H. Bangerter
Governor
Dee C. Hansen
Executive Director
Dianne R. Nielson, Ph.D.
Division Director

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

1 August 1991

TO: Pamela Grubaugh-Littig, Permit Supervisor

FROM: Hugh Klein, Reclamation Hydrologist

RE: Drainage Plans for the Coarse Refuse Pile as Required by NOV #N91-32-2-1, Sunnyside Coal Company, Sunnyside Mine, ACT/007/007, Folder #2, Carbon County, Utah

SYNOPSIS

Resolution of the above mentioned NOV commenced approximately three months ago. For all the background information leading up to this submission, the reader is directed to the Sunnyside file folder (ACT/007/007). The following analysis relates only to the latest submission, which was received 19 July 1991 in the Price Field Office.

ANALYSIS

Sunnyside's submission contains three parts: text, maps, and calculations. The text adequately discusses the Coarse Refuse Pile (CRP) and related areas, but does not clearly describe the interaction between Sunnyside (SCS) and EPC regarding long term management of the CRP. Specifically, the discussion lacks detailed verbage explaining that from now until EPC takes control of the CRP, new lifts will not be covered with topsoil. Eliminating future topsoil coverage will facilitate quicker and easier access to the refuse and subsequent cogeneration operations. However, without this discussion it may appear as though SCS is in violation of the regulations.

The map stands by itself, but needs two minor clarifications. First the scale by the North arrow reads " 1'= 200'," and second, the typical diversion ditch drawing does not show depth in feet (it only shows depth as a proportion to the side slopes).

Calculations for the CRP drainage network are clear and concise. As mandated

by R614-301-746.212, the diversions are designed to safely pass runoff from the 100-year 6-hour precipitation event. In addition, this author feels that the calculations illustrate prudent engineering design with appropriate safety margins.

Finally, some explanation of channel materials should be put forth here. The channel is to be 10 feet wide, 1 foot deep, and have 2:1 side slopes. It will be cut into the existing refuse materials. Utah coal regulations do not outline what materials are permissible for refuse pile diversions or conveyances. The only guidelines as to channel material is that the channel must be stable and minimize erosion. A number of points are relevant to support SCS's method of channel construction:

1) Refuse piles are supposed to be compacted to 90%, so this material would be fairly compact and stable making it difficult to erode.

2) If the 100-year 6-hour event occurred in the winter, it would be highly unlikely to affect the diversions because of the temperatures one would expect at this time of year. Any runoff that did occur would probably be minimal in quantity and the accompanying velocities would be small.

3) If the 100-year 6-hour event occurred in the summer, it is probable that runoff could be less than predicted due to increased evaporation. The explanation for this effect would be the prevailing temperatures during the summer months and the observed behavior of the CRP to retain heat and rapidly evaporate any moisture it comes in contact with.

4) The maximum expected flow velocity in the diversion is less than 5 FPS. In this case, it would be a safe to assume this is not an erosive velocity. The diversions will be protect with a geo-fabric at terrace intersections. If channel stability does warrant concern, SCS has made a commitment in the text to upgrade and/or repair as needed.

5) Sunnyside's calculations show a maximum flow depth of .17 feet. This has not taken into account any head losses along the channel length, so it is conceivable that have maximum flow depths may be < .17 feet.

Given these points, this author believes the channel design materials to be acceptable in terms of the existing regulations and site specific conditions.

RECOMMENDATIONS

1) SCS's CRP drainage plans are acceptable and appropriate and as such should be approved.

2) Plate III-40, map D4-0174 should be corrected to show a scale of 1" = 200', and the typical diversion ditch should be corrected to show a depth of 1 foot.

3) An additional review of the text should be conducted by someone other than this author in order to ascertain whether it details the SCS/EPC arrangements for the CRP well enough to explain why future lifts will not be covered with topsoil.