

0008

007/016 #2

---

# xxFacsimile Cover Sheet

**To:** Daron R. Haddock, Permit  
Supervisor  
**Company:** UTAH DOGM  
**Phone:**  
**Fax:** (801)359-3940

**From:** Paige Beville  
**Company:** ARCO Coal  
**Phone:** (303) 293-7913  
**Fax:** (303) 293-4073

**Date:** 5/22/95

**Pages including this  
cover page:** 3

**Comments:** Per our conversation. Let me know if you need any additional information/support.



GRAND JUNCTION OFFICE

May 22, 1995

20-29

Ms. Paige B. Beville  
Arco Coal Co.  
555 Seventeenth St.  
Denver, CO 80202

RE: Gordon Creek Slope Stability Analyses

Dear Ms. Beville:

In response to your request, we submit the following elaboration of our thoughts regarding the above subject.

The principal issue seems to be the assumption of soil saturation condition for the stability analyses. OSM estimates assume a fill saturated in the bottom 1/3, while AAI analyses were based on all the fill in a saturated condition.

Drainages and water conducting fractures discharge into the backslope areas at the Gordon Creek sites and provide a source of water that could, in wet years, saturate the backfilled slope. An example of saturated soil instability exists in the adjacent West Fork drainage. Slope instability exists in similar topography throughout Eastern Utah and Western Colorado. During periods of high snowpack and high rainfall, saturation conditions can change substantially producing unstable conditions in susceptible soils. Long-term stability and an interest in minimizing the need for maintenance activities that will likely produce additional disturbance directed conservative assumptions with respect to slope stability.

Drainage diversions, while appearing to be an acceptable remedy, often require maintenance attention in the long term and are susceptible to plugging, frost action and disruption as a result of slope movements.

Observations of slope angles in the vicinity of the portals and on spoil slopes vary. The angle of internal friction is sometimes used as an approximation of the angle of repose which under dry or partially saturated conditions represents a stable slope. Normally stable slopes can, however, become unstable when water is introduced as a result of abnormally high snow pack or precipitation events.

Ms. Paige Beville  
May 22, 1995

Page Two

Reclamation decisions must be based on long-term perspectives that consider abnormal events and conditions to ensure stability and minimize disruptions and sometimes substantial disturbance due to slope failures. Repairs and rework, if required following slope failures, will interrupt the natural revegetation and reclamation process that will, at best, be supplemented by human efforts. For these reasons, a conservative design assumption of saturated conditions was applied in stability analyses.

We have not conducted additional analyses employing the soil saturation conditions used by OSM.

Please advise if additional analyses or comment are required.

Sincerely,



Brian F. McGunegle  
Associate

BFM:nm