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

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April 21, 1999

TO: File
THRU: Joe Helfrich, Permit Supervisor *Jeh*
FROM: Sharon Falvey, Senior Reclamation Specialist *SRS*
RE: Barn Canyon Ventilation Facility, Permit Amendment, Cyprus Plateau Mining Corporation, Willow Creek Mine, ACT/007/038-98B#2, Folder #2, Carbon County, Utah

SYNOPSIS:

Cyprus Plateau Mining Corporation (CPMC) has submitted an amendment for the Barn Canyon Escape Hoist/Vertical Ventilation Shaft. The ventilation facility will increase the disturbed area by 2.34 acres. This review is focused on hydrologic information mostly presented in Exhibit 22. Discrepancies that exist may be submitted upon project completion.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

Clear and Accurate

Page 3.7-96 does not fit directly into the text in the existing plan. A portion of the existing page, including section heading 3.7.9, is not found in the page(s) submitted for the amendment. The applicant will be required to submit a complete copy removing the redline strike-out and should correct any deficiencies related to inserting the amendment into the existing plan at that time.

Findings:

This amendment does not meet the minimum requirements of this section. The amendment must include the following:

- R645-301-120.** Submit a complete amendment in a format that: 1) removes the redline strike-out, 2) can be directly inserted into the existing plan, 3) includes the missing text from page 3.7-96, and 4) corrects any pages which do not coalesce with the existing plan.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-720.

Analysis:

Surface-water information.

The Barn Canyon contains an ephemeral drainage. By regulatory definition this drainage is intermittent because it is greater than 1 square mile.

Probable hydrologic consequences determination.

The Barn Canyon ventilation shaft will be sealed with a five foot re-enforced upward expanding concrete plug on top of the bulkhead, and will be buried by four feet of soil that is re-enforced with rock around its base. It is expected that this seal will result in minimizing potential impacts to the hydrologic balance by preventing runoff from entering the underground entry. The applicant shows the ventilation portal location in relation to the postmining drainage along the road on Map 32A.

Construction at the Barn Canyon ventilation shaft is not expected to involve intercepting ground water that would need to be discharged from the underground workings. Currently ground water encountered in the mine has characteristics that do not meet UPDES discharge requirements. If intercepted groundwater needs to be discharged, the plan commits to convey the ground water to the raw water pond and retain it in a closed loop system. Encountered ground water will be analyzed according to the ground water baseline parameters outlined in the plan, and the permittee will obtain Division approval prior to discharge or use (pg 4.7-10). The amendment also provides commitments to wash down the cement trucks into the raw water pond to reduce potential for impacts to the Price River downstream from the construction site.

Findings:

This amendment does not meet the minimum requirements of this section.

**OPERATIONAL
HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57;
R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514,
-301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750,
-301-761, -301-764.

Analysis:

Discharges into an underground mine.

No discharge into an underground mine is applied for or granted with this amendment.

Diversions.

Diversions around the fan portal were designed to convey runoff from a 10 year - 6 hour event.

Drainage is routed along the pad perimeter. The disturbed area is an alternate sediment control area that will be treated with gravel to minimize erosion. Ditch UD-24 is not shown to drain to any existing drainage features but, will join road ditch DD-31. The last five feet of this ditch are to be flattened and expanded to convey runoff across the road.

Drainage associated with the ventilation shaft access road are presented on Maps 31A, 31B, and 33. The mine intends to retain an existing road for site access. The existing road lies in the canyon drainage at some locations. The existing road shows no signs of instability or excessive erosion. (This was verified on May 13, 1998: See the DOGM field visit form). Alterations proposed to improve the existing road include; two passing areas, two swales, two culverts and two adjacent road ditches DD-31 and DD-32. The plan shows an existing road configuration, in section DD-31b, where the road is not sloped adequately to promote runoff flow along the roadside. **The applicant should provide proof of the effort in cutting this section to the design presented in DD-31a as is recommended by the consultant. It is recognized the road substrate is composed of rock and cobbles and re-grading may not be feasible in this section without blasting. However, attempts should be made to re-grade this section.**

Stream buffer zones.

The ventilation pad is within an ephemeral drainage. An existing road will be utilized for access and maintenance issues. The existing road is aligned in the drainage through the canyon. Stream buffer zone regulations apply to this site because the site drains a watershed area greater than one square mile. The minimum design requirements for the 10 year- 6 hour event on the road is considered adequate based on the following:

- The proposed road is to be used for maintenance access only after construction is completed.
- The proposed design will promote runoff to flow into existing stream channels rather than the current conditions which convey flow along portions of the road and by-pass natural stream channel sections.

The Division is granting an exemption to R645-742.412 because the applicant has committed to the following at the request of the Division and in accordance with R645-301-730:

- Clean gravel will be used, particles smaller than + 8 mesh (2.38 m.m.) will be removed.
- Truck wash down from cement mixing associated with the site construction will be drained into the thickener pond.
- Gravel use will be minimized and applied only in the areas designated. Swale construction will avoid placing gravel in the flow path from the existing natural channel (Development will begin downstream from the natural channel to minimize contributing sediment to the channel).

Sediment control measures.

The sediment control plan is presented on the Barn Canyon Fan Pad Site Plan (Map 31A). Design calculations are provided in Exhibit 22. An Alternate Sediment Control (ASC) measure is used to treat the sediment coming from the Barn Canyon ventilation site. The pad is treated by surfacing the disturbed area with two inches of washed gravel and placing a boulder re-enforced toe along the cut slope. Washed gravel, eliminating particle sizes less than 8 mesh, will be used to minimize the potential for additional sediment contributions. Gravel will be placed downstream from the natural drainage to minimize contributions to the channel in locations where swales are constructed and will be applied only in

designated areas.

Although the proposed method for sediment control is considered acceptable, specific information still needs to be supplied for the ASC measures to be employed. Designs and maintenance for the erosion control methods, and sediment storage capacity of practices in and downstream from the disturbed area need to be addressed. Suggested ways to provide this information include; 1) estimating the roughened pocket area and volume of sediment that may be contained in the roughened surfaces, 2) monitoring for visual movement of gravel and sediment from the site and clean up if movement is excessive, 3) replacing gravel on the pad if gravel is displaced from the site, 4) a commitment to provide additional measures should sediment from the site become excessive.

The submitted information includes an estimate for sediment yield and compares undisturbed, operational and post-reclamation site conditions. The estimate provided shows the reclamation configuration to be less erosive than the natural conditions. The division disagrees with some assumptions used in this comparison. The K factor, after manipulation for the reclaimed section, is not expected to be less erosive than the factor for undisturbed soils. The mulching practice, was accounted for as soil organic matter to adjust the K factor and then was also accounted for as an erosion control practice. This effectively resulted in reducing erosion from one practice, twice. Also, specific mulch application and roughening methods were not referenced. Still, the proposed method for sediment control is considered acceptable because the area is relatively small, and the determination for success in the practices conducted at the site will be determined from ongoing site inspection.

Topsoil will be transported to the Gravel Canyon topsoil stockpile. Sediment control measures for the topsoil storage area include surrounding the storage site with a berm, roughening the surface and establishing vegetation.

Exemptions for siltation structures.

No exemption from siltation structures was requested or granted associated with the Barn Canyon ventilation portal amendment.

Findings:

This amendment does not meet the minimum requirements of this section. The amendment must include the following:

R645-301-740. Specific information needs to be supplied for the ASC measures to be employed for operational and reclamation phases. The designs and maintenance for the erosion control methods need to be provided and the sediment storage capacity of practices in and downstream from the disturbed area should be used to predict the degree to which the successful mining and reclamation techniques are applied (See: T.A. for suggestions). Discrepancies in the K factor for reclamation conditions, and the adjustments to the K factor (increasing the organic matter through mulching practices) needs further references, description, or clarification.

RECLAMATION PLAN

RECLAMATION HYDROLOGY

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analyses:

Diversions.

The CPMC has committed to establish a post mining configuration compatible with the natural drainage pattern of the surrounding terrain. The reclamation plan indicates the culverts will be removed and the road, road ditches, and swales will be retained. Presently, no statement from the land owner is provided to acknowledge retaining the road as a post mining land use.

Sediment control measures.

The reclamation sediment control measures to be applied at this site are roughening and mulching. Specific application for these techniques needs to be identified or referenced in the hydrology discussion. See the findings under **Operational Hydrologic Information** presented previously.

Findings:

This amendment does not meet the minimum requirements of this section. The amendment must include the following:

See the requirements under **Operational Hydrologic Information, R645-301-740** above.

RECOMMENDATION:

It is recommended that this amendment be approved following incorporation of redline strikeouts. Deficiencies may be attached as stipulations as the practical application is acceptable even though clarifications pertaining to maintenance and technical discrepancies exists. These will need to be submitted upon project completion.