



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

1594 West North Temple, Suite 1210

PO Box 145801

Salt Lake City, Utah 84114-5801

801-538-5340

801-359-3940 (Fax)

801-538-7223 (TDD)

Michael O. Leavitt  
Governor

Lowell P. Braxton  
Division Director

August 13, 1998

TO: File

THRU: Joe Helfrich, Permit Supervisor *JH*

FROM: Sharon Falvey, Senior Reclamation Specialist *SF*

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 consist of a vertical ventilation shaft in a 0.72 acre area with 0.46 disturbed acres. Ventilation facilities will be provided if needed.

The amendment format correlates with information provided in the as-built hydrology calculations submitted in October 1997. The Division is waiting for the additional information identified to be submitted as part of the as-built information, therefore, the amendment was not reviewed. When approving the Barn Canyon the assumption is that all information provided is complete and accurate and the Barn Canyon information correlates accurately with the October 1977 submittal.

## TECHNICAL ANALYSIS:

## ENVIRONMENTAL RESOURCE INFORMATION

## 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 Bear Canyon Ventilation shaft will be sealed with a 5 foot re-enforced upward expanding concrete plug on top of the bulkhead, buried by 4 feet of soil cover and, re-enforced with rock around it's 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 32.

This amendment does not require changes to the current PHC, however, other site conditions have changed and sections in the plan need to be updated. Currently in mine water was determined to have toxic characteristics that are not monitored under the approved UPDES permit at the surface water discharge points. The plan indicates the Barn Canyon ventilation area will intercept little to no ground water that would need to be discharged. However, it is proposed that any discharged water from the Barn Canyon shaft construction be conveyed to a temporary tank then to the raw water pond, page 4.7-10. The existing plan, in section 4.5-27, allows for ground water to be routed to the minewater storage tank or, allows for ground water discharge storage of 1.0 acre foot at Sedimentation Pond 001. The mine water intercepted previously was not identified to be a potential under the approved permit. Because of the unexpected poor water quality at this source, all intercepted ground water must be retained underground or, analyses must be provided for any water discharged to surface sources. The permit still needs to be amended to acknowledge many of the changes associated with the minewater intercepted.

**Findings:**

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

**R645-301-730.** All intercepted ground water that needs to be discharged to the surface must undergo analyses according to the Division baseline requirements and approval must be obtained from the Division prior to being discharged to any surface facilities or surface facility storage location.

## **OPERATIONAL PLAN**

### **GENERAL**

**Analysis:**

The plan references several different disturbed area values. Section 4.5-4 identifies 0.36

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disturbed acres. Section 4.43 and exhibit 13-65, identifies 0.28 acres disturbance and the wildlife section identifies 0.98 acres disturbance. These may all refer to specific portions within the disturbed area but, that is not clear.

**Findings:**

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

**R645-301-120.** Clarify the references to the quantity of disturbed area between section 4.5-4, section 4.43, and the discussions in the wildlife section.

**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, -300-148, -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 provided and sized to convey runoff from a 10 year - 6 hour event. The area draining to the fan portal is considered miscellaneous drainage and the main undisturbed by pass ditch is located on the edge of the pad along the concrete retaining wall. This ditch collects flow that spills over the retaining wall. The disturbed area will be graded toward a low flow channel and treated downstream with silt fence or straw bales. Ditch UD-24 is not shown to drain to any existing drainage features but, will join road ditch DD-31. The last 5 feet of this ditch are to be flattened and expanded to convey runoff across the road.

Drainage designs associated with the ventilation shaft access road are presented on Map 33. The mine intends to retain the existing road for access to the site. Currently the existing road conveys the canyon drainage in some locations. The existing road is stable showing no signs of instability or major erosion. (This was verified on May 13, 1998: See the DOGM field visit form). Minimal alterations are proposed to improve the existing road including 2 passing areas, two swales, two culverts and two adjacent road ditches DD-31 and DD-32. Some road cutting will be required in two locations to control drainage.

Crushed gravel is proposed to be used where grading creates an erodible surface.

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However the fine materials often brought in with crushed gravel can add to the sediment loading and in this case may exceed the potential sediment contribution from the existing road/soil sub-base characteristics. Standard road base includes +200 mesh as the lower size limit. Erosion studies have shown soil erodibility increases as aggregate size decreases. Erosion increased by 1.4 times when a mean diameter of 3.0 decreased to 0.75 mm and erosion increased 7.5 times when an aggregate size decrease from 0.75 to 0.355 mm. Erosion rates doubled in aggregates further decreased to 0.21 mm. Clean gravel should be used and limiting crushed gravel use to material screened to + 8 mesh (2.38 mm) would minimize the potential for contributing sediment to undisturbed areas.

**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 are applicable to this site by definition because the site drains a watershed 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:

- Existing site conditions suggest this channel has not received flows at the 10 year- 6 hour event design magnitude (peak discharge of 42.5 cfs) for some time.
- The proposed road is to be used for maintenance access 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 with requiring the following as permit conditions 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 on Map 33. 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 31). Design calculations are provided in Exhibit 13. An Alternate Sediment Control measure (ASCA) is used to treat the sediment coming from the Barn Canyon ventilation site. The volume of water required to be treated for a 10 year- 24 hour event is equal to 945 ft<sup>3</sup>. To pass the peak

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flow from the event through the silt fence requires 32 linear feet when allowing a water depth of 0.25 feet to accumulate behind the fence. The pad access ramps are not treated by siltation structures but, they employ alternate sediment control measures by, minimizing the area and slope and by surfacing with gravel.

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:

**R645-301-730.** The Division is granting an exemption to R645-742.412 with the following provisions to be conditions of the permit: 1) Clean gravel will be used, soil particles smaller than + 8 mesh (2.38 m.m.) will be removed. 2) Gravel use will be minimized and applied only in the areas designated on Map 33. 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). 3) Truck wash down for cement mixing associated with the site construction will be drained into the thickener pond.

#### **MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

#### **Analyses:**

Map 19A shows subsidence outside of the permit area. By definition this is a coal mining and reclamation activity that needs to be conducted within the permit area boundary.

#### **Findings:**

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

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**R645-300-141.** Coal Mining and Reclamation Operations will be conducted only on those lands specifically designated as the permit area. The mining layout must be adjusted to keep subsidence within the permit area.

## **RECLAMATION PLAN**

### **APPROXIMATE ORIGINAL CONTOUR RESTORATION**

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

#### **Analyses:**

In section 5.4.1.3 under AOC variance the applicant claims that reclaiming the road would disturb soils and vegetation for no reason and the road will be "retained to prevent unnecessary environmental degradation" on page 5.4-12 are not acceptable statements and they should be removed from the plan. Reclamation would, over the long term, reduce erosion and increase vegetative cover.

#### **Findings:**

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

**R645-301-742-240.** To make the permit accurate the following statements must be removed. In section 5.4.1.3 under AOC variance #2, wherein the applicant states reclaiming the road would disturb soils and vegetation for no reason and the information on page 5.4-12 which states the road will be "retained to prevent unnecessary environmental degradation".

## **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 postmining topography is presented on the Post Mining Topography (Map 32). Reclaimed Barn Canyon Fan Site slopes will exceed 2H:1V. To transition the slopes from the disturbed to the natural topography. The CPMC has committed to establish a post mining configuration compatible with the natural drainage pattern of the surrounding terrain. No

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diversions are proposed during reclamation however minor re-configuration of the ephemeral drainage will occur.

The reclamation plan indicates the culverts will be removed and the road ditches will be retained. Information in section 5.4.1.3 conflicts with other discussions in the plan. During the reclamation period the road can not be brought to it's existing configuration because it will not meet drainage requirements for reclamation. A reclamation configuration that meets the regulatory requirements needs to be provided for road retention.

#### **Sediment control measures.**

The areas using alternate sediment control measures during reclamation are illustrated on Mine Surface Facilities area interim drainage control Map 21B. The reclamation sediment control measures to be applied at this site are roughening, straw bales and silt fencing.

#### **Findings:**

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

**R645-301-742-240.** A reclamation configuration that meets the regulatory requirements for road drainage needs to be provided for the Barn Canyon Road proposed to be retained following mining.

#### **RECOMMENDATION:**

It is recommended that these deficiencies be incorporated into the plan prior to construction or they may be attached as stipulations to the approval. The permittee will also need to resubmit the information that updates Exhibit 13 for insertion into the October 1997 submittal. These changes will be checked for compatibility while reviewing Exhibit 13.